APPENDIX A

UNITED STATES COURT OF APPEALS
TENTH CIRCUIT

No. 90-6325

UNITED STATES OF AMERICA,
Plaintiff-Appellee,

v.

ROYAL N. HARDAGE; Special Master; OKLAHOMA NATIONAL STOCKYARDS COMPANY; JOC OIL; DAL-WORTH, INDUSTRIES; DOUBLE EAGLE; SAMUEL BISHKIN, Doing Business as Eltex Chemical; L & S BEARING COMPANY; KERR-MCGEE CORPORATION; CATO OIL; POWELL SANITATION SERVICE, INC.; LOWE CHEMICAL; MONSANTO; TEXTRON INC.,
Defendants.

UNITED STATES POLLUTION CONTROL,
Defendant-Appellee,

v.

HARDAGE STEERING COMMITTEE; ADVANCE CHEMICAL COMPANY; ALLIED-SIGNAL, INC.; AMERICAN TELEPHONE & TELEGRAPH COMPANY; ASHLAND OIL INC.; ATLANTIC RICHFIELD COMPANY; BORG-WARNER CORPORATION; BRIDGESTONE/FIRESTONE, INC., Formerly Known as the FIRESTONE TIRE & RUBBER COMPANY; BULL HN INFORMATION, Formerly HONEYWELL BULL INC.; EXXON CORPORATION; GENCORP INC., (DIVERSITECH GENERAL); MAGNETIC PERIPHERALS, INC.; MAREMONT CORPORATION; MCDONNELL-DOUGLAS CORPORATION; MOBIL CHEMICAL COMPANY; NALCO CHEMI-

CAL COMPANY; OKLAHOMA GAS AND ELECTRIC COMPANY; THE OKLAHOMA PUBLISHING COMPANY; ROCKWELL INTERNATIONAL CORPORATION, Formerly Known as, NORTH AMERICAN ROCKWELL; TEXACO REFINING AND MARKETING, INC.; TEXAS INSTRUMENTS INCORPORATED; UOP INC.; UNIROYAL INC.; WESTINGHOUSE ELECTRIC CORPORATION; WEYERHAEUSER,

Third-party-defendants-Appellants,

A.H. BELO, Doing Business as DALLAS MORNING NEWS,

Third-party-defendant-Appellee,

AMERICAN AIRLINES, INC.; BAXTER HEALTH CARE CORP., Doing Business as PHARMASEAL LABORATORIES; BENJAMIN MOORE & COMPANY; BOB MCBROOM, Doing Business as AMERICAN FURNITURE STRIPPING; BROWN & ROOT, INC.; BROWNING-FERRIS, INC., Formerly Known as COLT INDUSTRIES INC., Doing Business as HOLLY SPECIALTY PRODUCTS; CONTINENTAL INDUSTRIES INC.; CROWN INDUSTRIES, Also Known as CROWN TRANSPORT CO. (GEO INTERNATIONAL); DESOTO, INC.; DELUXE CORPORATION, Doing Business as DELUXE CHECK PRINTERS, INC.; DIFFEE MOTOR CO., INC.; ENGINEERING ENTERPRISES, INC.; FIRST NATIONAL MANAGEMENT, Also Known as FIRST OKLAHOMA CORP., Formerly Known as FIRST OKLAHOMA BANCORP, INC.; FRUEHAUF CORPORATION (HOBBS & KELSEY HAYES DIVISIONS); HALLIBURTON SERVICES, a DIVISION OF HALLIBURTON COMPANY; INTERSTATE TRUCK REPAIR; MACLANBURG-DUNCAN COMPANY; MCALESTER PUBLIC SCHOOLS; OK GRAPHICS; OKLAHOMA NATURAL GAS COMPANY; PRESBYTERIAN HOSPITAL, INC. Doing Business as PRESBYTERIAN HEALTH FOUNDATION; SAFETY-KLEEN CORPORATION; SHAKLEE CORPORATION; SOONER FORD; SOUTHWESTERN STEEL ROLLING DOOR COMPANY; the ARGICULTURE & NU-

TRITION COMPANY; THOMAS & BETTS CORPORATION; UNISYS CORPORATION, Formerly Known as SPERRY CORPORATION, Doing Business as SPERRY-VICKERS; the UNIVERSITY OF OKLAHOMA; W.O.L. CORPORATION, also Known as WOLVERINE PIPE; WEBCO INDUSTRIES, INC., Doing Business as SOUTHWEST TUBE MANUFACTURING COMPANY; WELCH ENTERPRISES, INC., also Known as WELCH OIL,

Fourth Party
Defendants-Appellants.

Dec. 21, 1992

Terry W. Schackmann of Spencer Fane Britt & Browne, Kansas City, MO (Jerome T. Wolf, Carl H. Helmstetter, Spencer Fane Britt & Browne, Jeffrey N. Martin, Hunton & Williams, Washington, DC, Kenneth N. McKinney, Robert D. Tomlinson, Robert L. Roark, McKinney, Stringer & Webster, Oklahoma City, OK, with him on the brief), for Hardage Steering Committee, et al.

John T. Stahr, Atty., Environmental and Natural Resources Div., Dept. of Justice, Washington, DC (Richard B. Stewart, Asst. Atty. Gen., David C. Shilton, Steven Novick, Gary S. Guzy, Attys., Environmental and Natural Resources Div., Dept. of Justice, Washington, DC, Charles De Saillan, Atty., Office of Enforcement, E.P.A., Washington, DC with him on the brief), for U.S.

Before TACHA, and BALDOCK, Circuit Judges, and BROWN, District Judge.*

BALDOCK, Circuit Judge.

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* The Honorable Wesley E. Brown, Senior United States District Judge for the District of Kansas, sitting by designation.

This case arises from the cleanup effort at the Hardage Superfund Site (Hardage site), a federally controlled Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site near Criner, Oklahoma. CERCLA § 101 *et seq.*, 42 U.S.C. § 9601 *et seq.* Third-party-defendants Hardage Steering Committee, et al (HSC) appeal from the district court's December 8, 1989 order granting, in part, the United States' motion for partial summary judgment and declaratory judgment on response cost issues, *United States v. Hardage,* 733 F.Supp. 1424 (W.D.Okla.1989), and the district court's August 9, 1990 order entering Findings of Fact and Conclusions of Law for Remedy Selection Phase, *United States v. Hardage,* 750 F.Supp. 1460 (W.D.Okla.1990).

In 1986, the government filed this action against thirty-two generators and three transporters seeking injunctive relief under CERCLA § 106(a), 42 U.S.C. § 9606(a), to require them to clean up the Hardage site, and to recover costs incurred by the government under CERCLA § 107(a)(4)(A), 42 U.S.C. § 9607(a)(4)(A). Most of these original defendants organized themselves as HSC defendants. HSC stipulated to liability for the presence of toxic waste at the Hardage site. The district court bifurcated the case into a remedy phase, at which a remedy for the cleanup of the Hardage site would be selected, and a liability phase, at which liability for the cleanup would be determined for those who did not stipulate to liability. Prior to the remedy phase of the trial, the government moved for partial summary judgment against HSC to recover response costs it incurred at the Hardage site. The district court granted the government's motion for all direct response costs and denied summary judgment for the government's indirect response costs. At the same time, the court granted the government's request for a declaratory judgment that HSC was liable for all of the government's future response costs. The district court entered this order prior to the commencement of the remedy phase of the trial.

At the remedy phase of the trial, the government and HSC presented the court with competing remedies. The court ultimately rejected the government's remedy and ordered implementation of HSC's remedy, with minor modifications. At the remedy phase the court also awarded the government its indirect response costs and additional direct response costs against HSC. The court awarded HSC only a portion of the response costs it counter-claimed against the government as a responsible party.[1]

HSC appeals the district court's entry of partial summary judgment for the government on two grounds. First, HSC contends that the court erred in granting partial summary judgment, holding it liable for the government's direct response costs, because of the existence of genuine issues of material fact. Second, HSC contends that summary judgment should be reversed because the court ultimately determined, during the remedy phase of the trial, that the government's trial remedy was inconsistent with the National Contingency Plan (NCP). HSC also contends that the declaratory judgment in favor of the government, holding that HSC is liable for all future government response costs, must be reversed because it does not allow HSC to contest these response costs as inconsistent with the NCP. Lastly, HSC appeals the district court's denial of certain HSC response costs, claiming that the court erroneously applied CERCLA § 122 (e)(6), 42 U.S.C. § 9622(e)(6), to its claim for costs, and that the court disallowed certain HSC response costs based on the erroneous presumption that private parties may not recover litigation-related response costs. All issues have been certified under Fed.R.Civ.P. 54(b) for interlocutory review, and we exercise jurisdiction pursuant to 28 U.S.C. § 1291.

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[1] The government stipulated to liability for the disposal of approximately 920,000 gallons of hazardous substances at the Hardage site.

I. BACKGROUND

Defendant Royal N. Hardage owned and operated the Hardage waste disposal site. The site operated from September 1972 until November 1980, receiving more than twenty million gallons of waste for storage and/or disposal. In 1979, the Environmental Protection Agency (EPA) investigated and inspected the site and concluded that the site posed a threat to the public health, welfare, and environment. In September 1980, the United States Department of Justice (DOJ) filed suit in *United States v. Hardage,* No. CIV-80-1031-W (W.D.Okla. filed Sept. 8, 1980) [hereinafter *Hardage I*] against Mr. Hardage, the site owner.

In *Hardage I,* the court found that the Hardage site was dangerous and determined that Mr. Hardage was liable under the Resource Conservation and Recovery Act § 7003, 42 U.S.C. § 6973, and CERCLA § 106, 42 U.S.C. § 9606. The court also awarded the government partial judgment for its response costs incurred through December 1982. The government was unable to obtain payment from Mr. Hardage, however, because he filed for bankruptcy and received a discharge of indebtedness in June 1985. Thereafter, the government identified numerous other parties responsible for the contamination of the site, and notified them of their status as Potentially Responsible Parties (PRP's) pursuant to CERCLA § 104, 42 U.S.C. § 9604. In June 1986, the government filed the instant action, *United States v. Hardage,* No. CIV-86-1401-P (W.D.Okla. filed June 25, 1986) [hereinafter *Hardage II*] against the identified PRP's, the majority of whom ultimately formed HSC, to require them to clean up the Hardage site, and to recover response costs incurred by the government.

Throughout the proceedings in *Hardage I* and prior to the remedy phase of *Hardage II,* the EPA continued to investigate and study the Hardage site to develop an appropriate remedy, eventually settling on the remedy it

presented at trial. Beginning in 1986, HSC also became involved with the cleanup of the site, instituting interim remedial measures as well as developing its own permanent remedy for the Hardage site. At the remedy phase trial of *Hardage II*, the court considered both the government's proposed remedy and HSC's remedy, and after determining that the HSC remedy was superior, the court ordered HSC's remedy to be implemented with minor modifications. Although the court conducted a de novo review of the competing remedies, it stated that had it limited its review to EPA's administrative record, it would have rejected the government's remedy as arbitrary, capricious, and an abuse of discretion. Finally, the court found that the government's excavation component of its remedy did not satisfy NCP standards.[2]

II. PARTIAL SUMMARY JUDGMENT

HSC contends that the district court erred in granting the government's motion for partial summary judgment

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[2] The rejected government remedy involves excavation of hazardous wastes in addition to soil vapor extraction, which is a remedial measure designed to remove volatile organic compounds from soil and to transfer them to the airstream. The HSC remedy involves containment of hazardous wastes at the Hardage site by controlling surface water pathways, preventing direct human contract with wastes, controlling air emissions from the site, precluding the use of contaminated groundwater, and providing for a contingent response plan to ensure continued maintenance of the site. The court adopted HSC's remedy finding that it was supported by adequate data and analysis, was more cost-effective than the government's remedy, was feasible, posed little risk of adverse effects to workers, and best mitigated and minimized threats to the public health, welfare, and environment. The court rejected the government's remedy finding that, because the remedy was developed without adequate deliberation and consideration, it could ultimately fail and lead to future remedial action costs. The court also found that the government's remedy potentially threatened human health and the environment, and cost substantially more than HSC's remedy without any demonstrable benefit to the public health, welfare, or environment. The court also noted that the State of Oklahoma opposed the government's remedy.

for response costs because HSC established the existence of genuine issues of material fact. This argument has two components: (1) HSC claims that its expert affidavits raised a genuine issue of material fact that the government's response costs were excessive and unreasonable and therefore unrecoverable, and (2) HSC claims that the court erroneously rejected, as conclusory, its expert affidavits relating to whether the government's costs were in fact incurred at the Hardage site. HSC also contends that we should reverse the entry of summary judgment in favor of the government in light of the district court's subsequent trial determination that the excavation component of the government's remedy is inconsistent with the NCP. We review a district court's order granting summary judgment de novo, *Applied Genetics Int'l, Inc. v. First Affiliated Sec., Inc.*, 912 F.2d 1238, 1241 (10th Cir.1990).

Section 107(a) of CERCLA imposes liability on four categories of persons, including owners and operators of hazardous waste sites, and generators and transporters of hazardous waste, for costs including:

> (A) all costs of removal or remedial action incurred by the United States Government or a State or an Indian tribe not inconsistent with the national contingency plan;

Id. § 107(a)(4)(A), 42 U.S.C. § 9607(a)(4)(A). This section authorizes the government to recover *all* costs of removal or remedial response actions, incurred not inconsistent with the NCP. *United States v. R.W. Meyer, Inc.*, 889 F.2d 1497, 1500 (6th Cir.1989), *cert. denied*, 494 U.S. 1057, 110 S.Ct. 1527, 108 L.Ed.2d 767 (1990).

CERCLA defines remove or removal as follows:

> The terms "remove" or "removal" means [sic] the cleanup or removal of released hazardous substances from the environment, such actions as may be neces-

> sary [sic] taken in the event of the threat of release of hazardous substances into the environment, such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances, the disposal of removed material, or the taking of such other actions as may be necessary to prevent, minimize, or mitigate damage to the public health or welfare or to the environment, which may otherwise result from a release or threat of release. The term includes, in addition, wthout being limited to . . . action taken under section 9604(b) of this title . . . .

CERCLA § 101(23), 42 U.S.C. § 9601(23) (footnote omitted). The § 9604(b) authorized action, referenced in the above definition, includes:

> such planning, legal, fiscal, economic, engineering, architectural, and other studies or investigations as [the President] may deem necessary or appropriate to plan and direct response actions, to recover the costs thereof, and to enforce the provisions of this chapter.

CERCLA § 104(b), 42 U.S.C. § 9604(b).

CERCLA goes on to define remedy or remedial action as follows:

> The terms "remedy" or "remedial action" means [sic] those actions consistent with permanent remedy taken instead of or in addition to removal actions in the event of a release or threatened release of a hazardous substance into the environment . . . The term includes, but is not limited to, such actions at the location of the release as . . . any monitoring reasonably required to assure that such actions protect the public health and welfare and the environment . . . .

CERCLA § 101(24), 42 U.S.C. § 9601(24).

Finally, CERCLA defines respond or response actions as "remove, removal, remedy, and remedial action, all such terms (including the terms 'removal' and 'remedial action') include enforcement activities related thereto." CERCLA § 101(25), 42 U.S.C. § 9601(25).

As stated above, defendants found liable must pay "*all* costs of removal or remedial action incurred by the United States Government . . . not inconsistent with the national contingency plan." CERCLA § 107(a)(4)(A), 42 U.S.C. § 9607(a)(4)(A) (emphasis added). The NCP was promulgated pursuant to CERCLA § 105, 42 U.S.C. § 9605, and is the EPA regulation that establishes procedures for selection of response actions. *See* 40 C.F.R. pt. 300 (1989).[3] If the government's response actions are in harmony with the NCP, the costs incurred pursuant to those actions are recoverable from liable parties. We have not previously addressed the issue of who has the burden of showing consistency or inconsistency with the NCP when the government is seeking response costs, however, we are guided by the Eighth Circuit's approach in *United States v. Northeastern Pharmaceutical & Chemical Co. (NEPACCO)*, 810 F.2d 726 (8th Cir.1986), *cert. denied*, 484 U.S. 848, 108 S.Ct. 146, 98 L.Ed.2d 102 (1987).

First, we adopt the Eighth Circuit's holding that the burden of proof of inconsistency with the NCP rests with the defendant when the government seeks recovery of its costs. *Id.* at 747. Accord *R.W. Meyer, Inc.*, 889 F.2d at 1508. As the Eighth Circuit reasoned, CERCLA § 107(a)(4)(A) provides that the federal government can recover "all costs of removal or remedial action . . . not inconsistent with the NCP." *NEPACCO*, 810 F.2d at 747 (quoting CERCLA § 107(a)(4)(A), 42 U.S.C. § 9607(a)(4)(A)). By contrast, CERCLA § 107(a)(4)(B), 42 U.S.C. § 9607(a)(4)(B), provides that "any

[3] The 1989 NCP is relevant to this appeal.

other person" can recover "any other necessary costs of response . . . consistent with the [NCP]." *Id.* (quoting CERCLA § 107(a)(4)(B), 42 U.S.C. § 9607(a)(4)(B)). This statutory language indicates that Congress intended that a different standard apply to parties other than the federal government seeking response costs, and that these parties affirmatively prove that their actions are necessary and consistent with the NCP. *See id.* When the government is seeking response costs, however, consistency with the NCP is presumed unless the defendant can overcome this presumption by presenting evidence of inconsistency. *Id.*

We further are guided by the Eighth Circuit's approach concerning what a defendant must show in order to demonstrate that the government's costs are incurred inconsistent with the NCP. In order to show that a government response cost is inconsistent with the NCP, a defendant must demonstrate that the government's response action giving rise to the particular cost is inconsistent with the NCP. *See NEPACCO,* 810 F.2d at 748. To show that the government's response action is inconsistent with the NCP, a defendant must demonstrate that the EPA acted arbitrarily and capriciously in choosing a particular response action to respond to a hazardous waste site. *Id.* We adopt the arbitrary and capricious standard of review "because determining the appropriate removal and remedial action involves specialized knowledge and expertise, [and therefore] the choice of a particular clean-up method is a matter within the discretion of the EPA." *Id.* We follow the Eighth Circuit's lead and give deference to the EPA's choice of response action and will not substitute our own judgment for that of the EPA. *See id.*

This case differs from *NEPACCO,* however, in that the recoverability of certain government response costs was determined on the government's motion for summary judgment. Further, the entry of summary judgment occurred prior to the trial on the issue of the appropriate

remedy for the Hardage site. We now turn to whether the government was entitled to summary judgment on the issue of HSC's liability for the government's response costs under CERCLA § 107(a)(4)(A).

Summary judgment is appropriate when there is no genuine dispute over a material fact and the moving party is entitled to judgment as a matter of law. *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 247, 106 S.Ct. 2505, 2509, 91 L.Ed.2d 202 (1986). The moving party carries the initial burden of demonstrating the absence of a genuine issue of material fact. *Celotex Corp. v. Catrett*, 477 U.S. 317, 323, 106 S.Ct. 2548, 2552, 91 L.Ed.2d 265 (1986). Once the moving party meets this burden, the burden then shifts to the nonmoving party to demonstrate "the existence of an element essential to that party's case, and on which that party will bear the burden of proof at trial." *Id.* at 322, 106 S.Ct. at 2552. "By its very terms, [the summary judgment] standard provides that the mere existence of *some* alleged factual dispute between the parties will not defeat an otherwise properly supported motion for summary judgment." *Anderson*, 477 U.S. at 247-48, 106 S.Ct. at 2510. Rather, "[o]nly disputes over facts that might affect the outcome of the suit under the governing law will properly preclude the entry of summary judgment." *Id.* at 248, 106 S.Ct. at 2510.

In the instant case, in support of its motion for partial summary judgment, the government submitted extensive documentation that it incurred $5,441,201.25 in response costs. The documentation included affidavits of various EPA and Department of Justice (DOJ) employees charged with accumulating the cost data. These affidavits were supported by summaries of cost data accumulated in connection with the Hardage site, and the source of that data. The district court held, and we agree, that the documentation offered in support of the government's response cost claim established a prima facie case that the

government is entitled to response costs in the amount stated above.

Once the government established this prima facie case, the burden shifted to HSC to demonstrate that the government's response action that gave rise to the particular cost submitted at summary judgment, was inconsistent with the NCP in that the government's choice of response action was arbitrary and capricious. In opposition to the government's motion for summary judgment, HSC offered the affidavits of two expert witnesses that disputed each of the government's claimed costs on a variety of grounds. However, HSC failed to identify any response actions by the government that were inconsistent with the NCP. Instead, HSC claims that to the extent that the expert affidavits challenged individual costs as excessive and unreasonable, the affidavits created a genuine issue of material fact for trial. We disagree.

CERCLA § 107(a)(4)(A) is a strict liability statute. The only way a responsible party can escape liability for the government's costs incurred at the particular site is to demonstrate that the government's response actions—i.e., removal or remedial actions—underlying the costs, are inconsistent with the NCP. HSC contends that a challenge that an *individual cost* is excessive or unreasonable demonstrates inconsistency with the NCP. However, CERCLA § 107(a)(4)(A) does not limit the government's recovery to "all *reasonable* costs;" rather, it permits the government to recover "*all* costs of removal or remedial action incurred . . . not inconsistent with the [NCP]." CERCLA § 107(a)(4)(A), 42 U.S.C. § 9607 (a)(4)(A) (emphasis added). The NCP regulates *choice of response actions,* not costs. *See* 40 C.F.R. §§ 300.65, 300.68 (1989). Costs, by themselves, cannot be inconsistent with the NCP. Only response actions—i.e., removal or remedial actions—can be inconsistent with the NCP, which can be demonstrated by a showing that the government's choice of response action was ar-

bitrary and capricious. As long as the government's choice of response action is not inconsistent with the NCP, its costs are presumed to be reasonable and therefore recoverable. *NEPACCO*, 810 F.2d at 748.

HSC argues that if the NCP fails to require reasonableness of individual costs, the EPA has failed its statutory mandate to develop a national contingency plan [NCP] that includes "means of assuring that remedial action measures are cost-effective over the period of potential exposure to the hazardous substances . . . ." CERCLA § 105(a)(7), 42 U.S.C. § 9605(a)(7). First, we note that CERCLA mandates that the NCP assure cost-effectiveness for remedial actions only. CERCLA contains no corresponding mandate for removal actions. The NCP does assure that remedial action measures are cost-effective by requiring the government to consider cost when selecting remedial alternatives, 40 C.F.R. § 300.68 (g)(1) (1989), and by requiring the government to select "a cost-effective remedial alternative." *Id.* § 300.68(i). However, a challenge that an individual cost is excessive or unreasonable does not demonstrate inconsistency with either of these NCP provisions. Rather, to survive summary judgment by demonstrating inconsistency with section 300.68(g)(1) or 300.68(i) of the NCP, a defendant must show that the government acted arbitrarily and capriciously in failing to consider cost, or in selecting a remedial alternative that is not cost-effective. HSC's affidavits charging that certain government costs were excessive and unreasonable failed to show that the underlying government response action was inconsistent with the NCP in that the government's choice of response action was arbitrary and capricious. Because response action inconsistency with the NCP is the sole defense to liability for the government's costs, HSC failed to establish a genuine issue of material fact for trial.[4]

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[4] HSC also contends that the NCP incorporates the Federal Acquisition Regulations (FAR's), 48 C.F.R. § 1500 *et seq.*, and that

HSC next alleges that the district court erroneously rejected, as conclusory, its expert affidavits relating to whether the government's costs were in fact incurred at the Hardage site. The affidavits in question challenged certain government response costs by stating that the government failed to produce adequate documentation that the purposes for which some of these costs were incurred were response activities at the Hardage site. The district court dismissed these challenges as conclusory and therefore inadequate to defeat summary judgment. HSC argues that expert witness affidavits do not fail to defeat summary judgment solely because they are conclusory. Without deciding whether conclusory expert witness affidavits are sufficient, in general, to defeat summary judgment, we determine that the above challenge to the government's response costs is insufficient to defeat summary judgment here. The expert witness affidavits at issue amount to no more than a denial that the government's documentation establishes a prima facie case that it is entitled to recover $5,441,201.25, in response costs. As we have already stated, we believe the government's documentation does establish a prima facie case, and therefore HSC's expert affidavits fail to establish a genuine issue for trial. Just because HSC's denial comes in the form of expert witness affidavits does not make it any more significant than a simple denial made in a pleading and as such is insufficient to defeat summary judgment. *See Celotex*, 477 U.S. at 324, 106 S.Ct. at 2553 (nonmoving party may not rest on its pleadings but must set forth specific facts showing that there is a genuine issue for trial).

HSC also asserts that the entry of partial summary judgment for the government must be reversed in light of

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if the government violates a provision of the FAR's then its associated costs are inconsistent with the NCP. We find HSC's argument irrelevant because HSC, at summary judgment, failed to provide any evidence that the government violated any provision of the FAR's.

the district court's subsequent remedy phase determinations. Subsequent to the entry of summary judgment for the government on the issue of response costs, the district court conducted the remedy phase of the trial. At this phase, the court considered both the government's proposed trial remedy and HSC's proposed remedy. After determining that HSC's remedy was superior, the court ordered HSC's remedy to be implemented with minor modifications. Incident to its decision concerning which remedy to implement, the court stated that the excavation component of the government's trial remedy "does not . . . satisfy NCP standards." *United States v. Hardage,* 750 F.Supp. 1460, 1481 (W.D.Okla. 1990). HSC argues that because, at the remedy phase of the trial, the court found the excavation component of the government's trial remedy to be inconsistent with the NCP, and, because inconsistency with the NCP is a defense to the recoverability of the government's costs, we must now reverse the district court's prior entry of summary judgment. We disagree.

As an appellate court reviewing the entry of summary judgment, our review is confined to an examination of the materials before the court at the time the ruling was made. *Voutour v. Vitale,* 761 F.2d 812, 817 (1st Cir. 1985), *cert. denied sub. nom, Saugus v. Voutour,* 474 U.S. 1100, 106 S.Ct. 879, 88 L.Ed.2d 916 (1986). "Neither the evidence offered subsequently at the trial nor the verdict is relevant." *Id.* One who loses on summary judgment cannot give a retroactive effect to a trial verdict, using it in an effort to create a genuine issue of material fact at the time the court was considering the motion for summary judgment. *Glaros v. H.H. Robertson Co.,* 797 F.2d 1564, 1569 (Fed.Cir.1986), *cert. dismissed,* 479 U.S. 1072, 107 S.Ct. 1262, 94 L.Ed.2d 124 (1987).

Here, HSC is attempting to give retroactive effect to the district court's determination at the remedy phase of

the trial that the excavation component of the government's trial remedy is inconsistent with the NCP. This HSC cannot do. The time at which HSC was required to establish the existence of a genuine issue of inconsistency with the NCP, as to the particular response costs submitted by the government at summary judgment, was long past when the remedy phase of the trial began. To defeat the government's claim for those response costs, HSC was required to establish a genuine issue of inconsistency with the NCP at the summary judgment phase, when recoverability of those particular government response costs was at issue. The court's subsequent remedy phase trial determination is irrelevant to the prior entry of summary judgment on the response cost issue. Our review is limited to the materials the district court had before it at the time of the ruling, and as we stated above, based on those materials, summary judgment was appropriate.

III. DECLARATORY JUDGMENT

HSC contends that the declaratory judgment entered in favor of the government must be reversed because it bars HSC from contesting future response costs submitted by the government, on the ground that the costs were incurred inconsistent with the NCP. We agree that, to the extent the entry of declaratory judgment prevents HSC from contesting future government costs on the basis that the underlying government response actions giving rise to the costs are themselves inconsistent with the NCP, the judgment must be reversed.

CERCLA § 113(g)(2), 42 U.S.C. § 9613(g)(2) specifically provides that:

> In any action [for recovery of response costs under CERCLA § 107] . . . the court shall enter a declatory judgment on *liability* for response costs or damages that will be binding on any subsequent action or actions to recover further response costs or damages.

(emphasis added). Thus, the entry of declaratory judgment *on the issue of liability* for future response costs is appropriate. The statute does not, however, contemplate preventing challenges to future costs, submitted under the declaration of liability, as having been incurred pursuant to response actions that are inconsistent with the NCP. The clear language of the statute dictates that a declaratory judgment determines *liability* for future response costs, not *recoverability* of those costs. A defense that the government's response costs are incurred pursuant to response actions that are inconsistent with the NCP is a defense to the recoverability of particular response costs, not a defense to liability for those costs. *See United States v. Kramer*, 757 F.Supp. 397, 436 (D.N.J. 1991). Therefore, a defendant who is declared liable for future response costs may still challenge those costs as unrecoverable because the underlying response actions giving rise to the costs are inconsistent with the NCP. *See eg., Kelley v. Thomas Solvent Co.*, 790 F.Supp. 710, 716 (W.D.Mich.1990); *United States v. Fairchild Industries, Inc.*, 766 F.Supp. 405, 415 (D.Md.1991); *O'Neil v. Picillo*, 682 F.Supp. 706, 730 (D.R.I.1988); *United States v. Northeastern Pharmaceutical & Chemical Co. (NEPACCO)*, 579 F.Supp. 823, 852 (W.D.Mo.1984), *aff'd in part and rev'd in part*, 810 F.2d 726 (8th Cir. 1986), *cert. denied*, 484 U.S. 848, 108 S.Ct. 146, 98 L.Ed.2d 102 (1987).

In its order granting, in part, the government's motion for partial summary judgment and declaratory judgment on response costs issues, the district court stated, "the United States' motion for a declaratory judgment for liability for future response costs associated with the Hardage site . . . shall also be granted." *United States v. Hardage*, 733 F.Supp. 1424, 1439 (W.D.Okla.1989). Thereafter, in its Judgment and Order filed on August 9, 1990, the district court set out the procedure for the government to collect its future response costs from HSC. *United States v. Hardage*, No. CIV-86-1401-P

(W.D.Okla.1990). The court indicated that should HSC dispute any portion of the government's claim for costs, and the dispute cannot be resolved between the parties, the "disputed claim [shall] be brought to the [c]ourt for resolution." *Id.* at 10-11. This language makes it unclear as to whether the declaratory judgment, as entered by the court, permits HSC to dispute costs submitted by the government on the ground that the response actions giving rise to the costs are inconsistent with the NCP. However, a statement by the court in its August 9, 1990 Findings of Fact and Conclusions of Law for Remedy Selection Phase indicates that the court did not contemplate allowing HSC to contest the recoverability of the government's response costs on the basis of inconsistency with the NCP, and to this extent we hold that the court erred.

In its Findings of Fact and Conclusions of Law for Remedy Selection Phase, the district court, in response to a defense by the HSC concerning costs submitted by the government, dismissed HSC's defense stating, "[h]owever, . . . the [court] granted the United States a declaratory judgment for all future response costs. Therefore, if the United States presents proof that these costs were incurred, it is entitled to recover these costs." *United States v. Hardage*, 750 F.Supp. 1460, 1500 (W.D.Okla.1990). Although HSC's defense to these costs was not based on inconsistency with the NCP,[5] we believe the court's statement indicates that the court, under the declaratory judgment, would not permit *any* HSC challenge to the recoverability of future government response costs as long as the government presents proof that the costs were incurred. This is reversible error, because, as we stated above, a declaratory judgment under CERCLA § 113 (g)(2) determines liability for future response costs, not

[5] HSC objected to the government's summary of its DOJ direct costs because it had not had an opportunity to review the documentation.

recoverability, and therefore, a challenge to the recoverability of future response costs—i.e., that the response actions giving rise to the costs are inconsistent with the NCP—must be allowed.

IV. HSC RESPONSE COSTS

HSC appeals the district court's denial of certain HSC response costs, claiming that the court erroneously applied CERCLA § 122(e)(6), 42 U.S.C. § 9622(e)(6), to its claim for response costs, and that the court disallowed certain HSC response costs based on the erroneous presumption that private parties may not recover litigation-related response costs. We review questions of law de novo, *Estate of Holl v. Commissioner*, 967 F.2d 1437, 1438 (10th Cir.1992), and findings of fact under a clearly erroneous standard, *O'Connor v. R.F. Lafferty & Co.*, 965 F.2d 893, 901 (10th Cir.1992).

At the remedy phase of the trial, HSC counterclaimed against the government as a responsible party for response costs it incurred in instituting interim remedial measures and developing its trial remedy. The district court awarded HSC $3,716,695.23 of its claimed $9,530,984.72 in response costs. The HSC costs allowed by the court included the costs of implementing interim remedial measures, and $3,220,000 of HSC's costs of conducting a second operable unit Remedial Investigation/Feasibility Study pursuant to a consent decree entered by the court. The court disallowed the remainder of HSC's costs finding them "not necessary costs of response . . . consistent with the [NCP]." *United States v. Hardage*, 750 F. Supp. 1460, 1519 (W.D.Okla.1990) (quoting CERCLA § 107(a)(4)(B), 42 U.S.C. § 9607(a)(4)(B)). Further, the court found that, based on the amount of waste at Hardage attributable to the government, the government was liable for 8.36% of HSC's costs.

HSC contends that the district court erroneously applied CERCLA § 122(e)(6), 42 U.S.C. § 9622(e)(6), to its claim for response costs thereby disallowing costs

which it was entitled to recover. We disagree. CERCLA § 122(e)(6) states:

> When either the President, or a potentially responsible party pursuant to an administrative order or consent decree under this chapter, has initiated a remedial investigation and feasibility study for a particular facility under this chapter, no potentially responsible party may undertake any remedial action at the facility unless such remedial action has been authorized by the President.

HSC contends that the district court improperly relied on this section and, as a result, disallowed all HSC response costs incurred without advance government approval. HSC argues that § 122(e)(6) does not apply to CERCLA § 106(a), 42 U.S.C. § 9606(a), injunction actions. Because we find that the court did not, in fact, apply § 122(e)(6) in disallowing any HSC response costs, we need not decide whether § 122(e)(6) is applicable to § 106(a) injunction actions.

In its Findings of Fact and Conclusions of Law for Remedy Selection Phase, the district court included a description of § 122(e)(6) as part of its general legal discussion of CERCLA. *Hardage,* 750 F.Supp. at 1511. However, following an extensive review of the record, we find that the district court did not rely on this provision in disallowing any of HSC's claimed costs. For every HSC cost disallowed, the district court found that HSC failed to meet its burden of demonstrating that the cost was necessary and consistent with the NCP. This is undoubtedly the standard that applies to private party recovery of response costs. *See* CERCLA § 107(a)(4)(B), 42 U.S.C. § 9607(a)(4)(B).

HSC directs our attention to language by the court inviting the government to indicate with which costs the government agreed, and further argues that it was not

mere coincidence that the only costs allowed by the court were those costs that the government did not dispute. We agree that it was not a coincidence, however, we believe that in requesting the government's response to the costs claimed by HSC, the court was merely asking whether the government, at trial, conceded that HSC was entitled to any of the costs. The court was not inquiring as to whether HSC had obtained advance government approval prior to incurring these costs, as would be required by § 122(e)(6). Rather, once the government conceded that certain HSC costs were necessary and incurred consistent with the NCP, the court awarded these costs as undisputed. Therefore, HSC's argument that the court erroneously relied on § 122(e)(6) is without merit.

HSC's last contention is that the district court erroneously disallowed certain HSC response costs as litigation-related. HSC claims that the district court disallowed, as a matter of law, all costs that it determined were litigation-related. As a result, HSC now invites us to conduct de novo review and rule on whether private parties are entitled to recover litigation-related costs under CERCLA. Because we determine that the district court clearly disallowed HSC's costs finding that HSC failed to prove that they are "necessary costs. . . . consistent with the [NCP]," CERCLA § 107(a)(4)(B), we decline the invitation, and instead determine whether the court's factual determination that certain litigation-related costs were not necessary and consistent with the NCP was clearly erroneous.

In its Findings of Fact and Conclusions of Law for Remedy Selection Phase, the district court carefully set out the legal standard that applies when a private party is seeking cost recovery from liable persons under CERCLA. *See Hardage*, 750 F.Supp. at 1509-11. The court correctly determined that, under the language of CERCLA, private parties may recover "any other necessary cost of response incurred . . . consistent with the

[NCP]." CERCLA § 107(a)(4)(B), 42 U.S.C. § 9607 (a)(4)(B). In the context of discussing what is a necessary response cost and how a response cost is incurred consistent with the NCP, the court addressed litigation-related costs. Finding that there is no express authority for the recovery of costs incurred to assist counsel in their defense of litigation, *Hardage,* 750 F.Supp. at 1511, the court went on to apply the "necessary and consistent with the NCP" standard. Although the court ultimately disallowed all HSC costs that it determined were litigation-related, there is nothing in the record or court's opinion to suggest that the court found these costs per se unrecoverable and therefore disregarded the "necessary and consistent with the NCP" standard. On the contrary, in its conclusions of law, the court specifically stated that the various HSC costs "borne primarily to support the HSC's litigation position are not 'necessary costs of response . . . consistent with the [NCP].' " *Id.* at 1519 (quoting CERCLA § 107(a)(4)(B), 42 U.S.C. § 9607 (a)(4)(B)). Therefore, because the court applied the correct legal standard in determining which costs submitted by HSC are recoverable, we now review the court's factual determinations under a clearly erroneous standard.

In *Daigle v. Shell Oil Co.,* 972 F.2d 1527, 1533 (10th Cir.1992), we noted that CERCLA fails to define "necessary costs of response." However, we noted that CERCLA did define the term response as a removal action or a remedial action, and in turn defined removal and remedy. *Id.* (citing CERCLA §§ 101(25), (23), (24), 42 U.S.C. §§ 9601(25), (23), 24)). We determined that the heart of the definitions of removal and remedy, *see supra* Part I, are "directed at containing and cleaning up hazardous substance releases." *Id.* at 1535. We therefore concluded that "necessary costs of response" must be necessary to the containment and cleanup of hazardous releases. *Id.* at 1535-37.

Given the context of this litigation, it was not clearly erroneous for the court to determine that costs, incurred by HSC to defend against the government's § 106(a) injunction action, were not necessary to the containment and cleanup of hazardous releases at the Hardage site. Unlike a situation where a site may remain hazardous absent a private party's involvement, the EPA has been involved at the Hardage site since 1979. The EPA conducted studies of the site and developed a remedy to contain and clean up the site. The EPA then sued for an injunction to compel the responsible parties to enact its remedy. Although the EPA's trial remedy was rejected by the court, the court had the authority to order the EPA to revise its remedy until it developed an acceptable method of dealing with the Hardage site. *See generally* CERCLA § 106(a), 42 U.S.C. § 106(a) (district court has jurisdiction to grant such relief as the public interest and equities of the case may require). In other words, regardless of whether HSC ever conducted any studies of the site, or developed its own remedy, the Hardage site would be cleaned up.

HSC, on the other hand, began investigating remedial alternatives upon being named as a defendant in the government's CERCLA § 106(a) injunction action. HSC's costs, although likely necessary for the development of its trial remedy, are not necessary to the containment and cleanup at the Hardage site. This is true even though HSC's remedy was ultimately accepted by the court with modifications, for, as stated above, the court has the authority to compel the EPA to submit an acceptable remedy for the cleanup of Hardage, with or without any involvement on the part of HSC. We hold that when a private party incurs response costs in developing its own remedy, solely to defend against the government's § 106 (a) injunction action, the private party's response costs are not "necessary" within the meaning of CERCLA § 107(a)(4)(B). For these reasons, we hold that it was

not clearly erroneous for the court to have concluded that HSC's litigation-related costs were not necessary and therefore unrecoverable.

In sum, the district court's order granting the government partial summary judgment for recovery of response costs is AFFIRMED. The district court's judgment denying in part, HSC's recovery of response costs against the government as a liable party is AFFIRMED. The district court's entry of declaratory judgment in favor of the government is REVERSED and REMANDED for further proceedings consistent with this opinion.

APPENDIX B

UNITED STATES COURT OF APPEALS
FOR THE TENTH CIRCUIT

No. 90-6325

UNITED STATES OF AMERICA,
Plaintiff-Appellee,

v.

ROYAL N. HARDAGE, *et al.*,
Defendants,

and

UNITED STATES POLLUTION CONTROL,
Defendant-Appellee,

v.

HARDAGE STEERING COMMITTEE, *et al.*,
Third-party
Defendants-Appellants,

A. H. BELO, doing business as Dallas Morning News,
Third-party
Defendant-Appellee,

AMERICAN AIRLINES, INC., *et al.*,
Fourth-party
Defendants-Appellants,

ORDER

Entered February 17, 1993

Before McKAY, Chief Circuit Judge, SEYMOUR, MOORE, ANDERSON, TACHA, BALDOCK, BRORBY, EBEL, and KELLY, Circuit Judges, and BROWN*, District Judge.

This matter comes on for consideration of appellants' petition for rehearing and suggestion for rehearing in banc.

Upon consideration whereof, the petition for rehearing is denied by the panel that rendered the decision.

In accordance with Rule 35(b), Federal Rules of Appellate Procedure, the suggestion for rehearing in banc was transmitted to all of the judges of the court who are in regular active service. No member of the panel and no judge in regular active service on the court having requested that the court be polled on rehearing in banc, Rule 35, Federal Rules of Appellate Procedure, the suggestion for rehearing in banc is denied.

Judge Logan did not participate.

Entered for the Court

/s/ Robert L. Hoecker
ROBERT L. HOECKER
Clerk

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* The Honorable Wesley E. Brown, United States District Court for the District of Kansas, sitting by designation.

APPENDIX C

UNITED STATES DISTRICT COURT
W.D. OKLAHOMA

No. CIV-86-1401-P

UNITED STATES OF AMERICA,
Plaintiff,

v.

ROYAL N. HARDAGE, *et al.*,
Defendants.

ADVANCE CHEMICAL COMPANY, *et al.*,
HARDAGE STEERING COMMITTEE,
Defendants and
Third-Party Plaintiffs.

v.

ABCO, INC., *et al.*,
Third-Party Defendants.

Aug. 9, 1990

As Corrected Oct. 16, 1990

John R. Barker, Anna Wolgast, Trial Attys., Kurt Weissmuller, Steven Novick, Gary S. Guzy, Bruce Buckheit, Kalyn C. Free, William Merrill, Jon Lipshultz, Dianne M. Shawley, Jerry Schwartz, Department of Justice, Charles de Saillan, E.P.A., Steven Mullins, U.S. Attys. Office, W.D. Oklahoma, Thomas Curtis, U.S. Air Force, for U.S..

Jerome T. Wolf, Carl Helmstetter, Kansas City, Mo., Allan Gates, Little Rock, Ark., Jeffrey N. Martin, Washington, D.C., James C. Morriss, Stephen Fink, Dallas,

Tex., Walter J. Hryszko, Houston, Tex., Michael D. Graves, Tulsa, Okl., Howard Seitzman, Austin, Tex., Charles W. Shipley, Tulsa, Okl., Amanda G. Birrell, Austin, Tex., Steve McKinney, Oklahoma City, Okl., Gavin McInnis, John D. White, Houston, Tex., Ross Plourde, Andy Coats, Leanne Burnett, Jean McLemore, Joseph F. Guida, Oklahoma City, Okl., Steve LeSatz, Houston, Tex., Irwin Steinhorn, Oklahoma City, Okl., for Hardage Steering Committee.

FINDINGS OF FACT AND CONCLUSIONS OF LAW FOR REMEDY SELECTION PHASE

PHILLIPS, District Judge.

I. INTRODUCTION

This Order arises from the trial of a bifurcated portion of a CERCLA [1] case. The trial involved the selection of a remedy for the cleanup of toxic wastes at the Hardage Superfund Site ("Hardage Site"), a closed industrial waste disposal site located near the town of Criner, Oklahoma. The parties have presented the Court with competing remedies.

The plaintiff United States of America advances an "excavation" remedy that seeks to remove a substantial portion of the wastes and hazardous substances from the site. A second major component of the government's remedy involves "soil vapor extraction," a technology developed to remove highly toxic and mobile compounds from the subsurface.

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[1] Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9601-75 (1982 & Supp. V 1987), *as amended by* the Superfund Amendments and Reauthoriation Act of 1986, Pub.L. No. 99-499, 100 Stat. 1613 (1986) [hereinafter "CERCLA" and "SARA"].

The defendants,[2] on the other hand, advance a "containment" remedy, which is designed to pump large quantities of waste from the site, while at the same time leaving substantial volumes of hazardous substances in the subsurface. The defense theory relies on a combination of natural bedrock features and man-made hydraulic barriers to create a "bathtub" effect, which according to the Hardage Steering Committee ("HSC") defendants, will contain the wastes and hazardous substances that are not pumped out.

The United States estimates that its remedy will cost approximately $70 million. However, the defendants contend that the costs of the government's proposed remedy, including major repair contingencies, operation, and maintenance, will be $150 million. On the other hand, the defendants estimate their remedy will cost approximately $54 million. The government generally agrees with this estimate. The defendants further argue that the site could have been cleaned up under a plan proposed in 1982 by the Oklahoma State Department of Health ("OSDH") at a cost, in 1989 dollars, of $17.75 million.

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[2] The trial defendants included the defendants named in the United States' Amended Complaint. The majority of the defendants organized themselves as the Hardage Steering Committee ("HSC") defendants. Section II of this Order contains a list of the HSC defendants.

Other defendants for trial included the Consent Decree defendants. On the eve of trial, the United States filed the Consent Decree for the Implementation of a Partial Remedial Action: Source Excavation and Soil Vapor Extraction, *United States v. Hardage*, No. CIV-86-1401-P (W.D.Okla. Nov. 21, 1989) (filing No. 2218). Under the provisions of the Consent Decree certain settling defendants agreed to pay for and to perform components of the United States' preferred remedy at the Hardage Site. Section VII of this Order describes and identifies the Consent Decree defendants. These defendants supported the United States' recommended remedy.

The government characterizes the defense proposal as "peace in our time." [3] The government argues that all containment remedies fail with the only question being when. The defendants, on the other hand, portray the government's remedy as unscientific, costly, and a product of "slavish adherence" to unsound litigation strategy. The defendants also allege that the government's proposed remedy was a "moving target" that changed substantially as the remedy trial drew closer.

As discussed more fully below, the Court divided the entire Hardage Site litigation into four major phases: (1) a remedy selection phase; (2) a liability phase; (3) a third-party claims phase; and (4) a cost allocation phase. Because of the critical nature of the remedy disputes in the case, the Court and the parties elected to proceed first with the Remedy Phase. Although the parties' estimates of the time necessary for trial of the Remedy Phase ranged from 52 days to several months,[4] the Court allocated only 20 days.[5] However, the trial was concluded in just 11 days, in part because of the streamlined procedures the Court adopted,[6] and, in part because of the extremely high caliber of legal representation on both sides of the lawsuit.

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[3] Reporter's Transcript of Proceedings at 95 11.-6-7 (Nov. 24, 1989). The government attorney's line during opening statements was reminiscent of the late British Prime Minister Neville Chamberlain's famous remark. Upon his return to London from Munich on September 30, 1938. Chamberlain proclaimed a peace pact with Hitler. Chamberlain told a throng of admirers. "I believe it is peace for our time." J. Bartlett, Bartlett's Familiar Quotations 727 (15th ed. 1980) (footnotes omitted).

[4] *See, e.g.*, Order at 11 (Jan. 20, 1989) (filing No. 1601) [hereinafter Jan. 20, 1989, Scheduling Order], attached hereto as Exhibit A.

[5] *See* Order Allocating Twenty (20) Days for Remedy Trial (Nov. 6, 1989) (filing No. 2086).

[6] *See* Jan. 20, 1989, Scheduling Order at 3-6.

The streamlined nonjury trial procedure involved the submission of witness affidavits in lieu of direct examination on most points. The parties were given an opporunity to present both supplemental direct examination and full cross-examination of the witnesses during trial. As ordered by the Court, the parties submitted comprehensive stipulations on undisputed matters.[7]

The Court has reviewed and considered the testimony of all of the 45 trial witnesses.[8] In addition, the Court has examined more than 8,000 pages of affidavits and deposition transcripts, 250 pages of stipulations, and more than 470 exhibits introduced by the parties at trial, totaling more than 150,000 pages of record.

As a result of the trial, the Court is convinced that the United States has not carried its burden of proof and has not convinced the Court of the propriety of its proposed remedy. Moreover, the Court is convinced that the HSC defendants' proposed containment remedy is markedly superior to the government's proposed remedy. The findings of fact and conclusions of law set forth below resolve the remedy issue in favor of the HSC defendants. In addition, this Order sets forth the Court's rulings on the other claims and matters that were at issue in the remedy trial, including: the Consent Decree,[9] the United States' supplemental response cost claim,[10] the HSC defendants' re-

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[7] *Id.* at 3.

[8] Review of the witnesses' direct examination was facilitated by the affidavit procedure described above. The Court carefully considered the cross-examination of the witnesses by means of a daily transcript service.

[9] Section IX of this Order discusses the Consent Decree.

[10] Section X of this Order details the United States' response cost claim.

sponse cost claim,[11] and other equitable defenses asserted against the United States.[12]

II. PARTIES AND APPEARANCES

The plaintiff was represented by the following counsel for the Remedy Phase:

John R. Barker, trial attorney, Department of Justice
Anna Wolgast, trial attorney, Department of Justice
Kurt Weissmuller, Department of Justice
Steven Novick, Department of Justice
Gary S. Guzy, Department of Justice
Bruce Buckheit, Department of Justice
Kalyn C. Free, Department of Justice
William Merrill, Department of Justice
Jon Lipshultz, Department of Justice
Dianne M. Shawley, Department of Justice
Jerry Schwartz, Department of Justice
Charles de Saillan, Environmental Protection Agency
Steven Mullins, United States Attorney's Office,
Western District of Oklahoma
Thomas Curtis, United States Air Force

Several groups of defendants, as well as individual defendants, participated in the Remedy Phase. The HSC defendants [13] made an appearance to oppose the imposition of the United States' proposed remedy, to oppose

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[11] Section XI of this Order discusses the HSC defendants' response cost claim.

[12] *Id.*

[13] Many of the original 37 defendants organized and formed the HSC defendants. At the direction of this Court in the Case Management Order issued on March 26, 1987, all defendants were represented administratively by liaison counsel. Case Management Order (Mar. 26, 1987) (filing No. 189).

approval of the Consent Decree, and to offer their own proposed containment remedy for implementation at the Hardage Site. Earlier, the HSC defendants had stipulated to liability.

The HSC defendants include: Advance Chemical Co.; Allied-Signal, Inc.; AT & T Technologies, Inc.; Ashland Oil, Inc.; Atlantic Richfield Co.; Borg-Warner Corp.; BULL HN Information Systems, Inc. (formerly Honeywell Bull, Inc.); Exxon Corp.; Bridgestone/Firestone, Inc.; GenCorp, Inc.; Magnetic Peripherals, Inc.; Maremont Corp.; McDonnell Douglas Corp.; Mobile Chemical Co.; Nalco Chemical Co.; Oklahoma Gas & Electric Co.; Oklahoma Publishing Co.; Rockwell International Corp.; Texaco Refining and Marketing, Inc.; Texas Instruments, Incorporated; Uniroyal, Inc.; UOP, Inc.; Westinghouse Electric Corp.; Weyerhaeuser Co.; and Powell Sanitation Service, Inc.

Common counsel provided primary representation for the HSC in the remedy trial. Kenneth N. McKinney, Robert D. Tomlinson, Mark Coldiron, and Dawn Northup served in this capacity. Certain other attorneys provided separate representation for individual HSC generator defendants and participated in various aspects of the trial. These corporations and their attorneys included:

Jerome T. Wolff, AT & T Technologies
Carl Helmstetter, AT & T Technologies
Allan Gates, Oklahoma Publishing Co.
Jeffrey N. Martin, Oklahoma Gas & Electric Co.
James C. Morriss, Bridgestone/Firestone, Inc.
Stephen Fink, Bridgestone/Firestone Tire & Rubber Company
Walter J. Hryszko, Exxon Corporation
Michael D. Graves, Honeywell, Magnetic Peripherals, and McDonnell Douglas Corp.
Howard Seitzman, Borg Warner Corp., Texas Instruments, Incorporated

Charles W. Shipley, Atlantic Richfield Co., Ashland Chemical Co., and Maremount Co.
Amanda G. Birrell, Nalco Chemical Co.

Other defendants and third-party defendants appeared through the following counsel:

Steve McKinney, Oklahoma National Stock Yards Co.
Gavin McInnis, Ralph L. Lowe
John D. White, JOC Oil Exploration Co., Inc.
Ross Plourde, Double-Eagle Refining Co.

As reflected by the trial record, participation at trial by counsel for the other defendants and the third-party defendants was minimal. Virtually all of the examination was conducted by common counsel for the HSC defendants.

Another group of defendants who participated in the Remedy Phase consisted of the consent decree participants. These are the defendants who, on the eve of trial, entered into a Consent Decree with the United States. Under the provisions of the Consent Decree filed on November 21, 1989, the consent decree defendants agreed to pay for, and to perform, certain elements of the United States' desired remedy for the Hardage Site.[14] The consent decree defendants who made appearance to support the government's proposed remedy and to advocate the approval of the Consent Decree, and their counsel, included:

Andy Coats, Cato Oil and Grease Co., Kerr-McGee Refining Corp.

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[14] Section IX of this Order discusses the Consent Decree in detail.

Leanne Burnett, Kerr-McGee Refining Corp.
Jeanie McLemore, L & S Bearing Co.
Joseph F. Guida, L & S Bearing Co., and Rotex Corp.
Steve LeSatz, United States Pollution Control, Inc.
Irwin Steinhorn, United States Pollution Control, Inc.

All counsel are to be complimented on their professionalism throughout the trial as well as during the other aspects of this case. With minor exceptions, each attorney's in-court appearances and written submissions exhibited an exceptionally high level of preparation, a good grasp of the legal issues, submission of the most current legal and statutory authority, and respect for of the Court and fellow attorneys. Just as the Court inherited this litigation from another judge of this district a number of the attorneys who participated in the trial inherited the case from others. As a result of the professionalism and spirit of cooperation, the case was tried quickly and thoroughly.

III. ABBREVIATIONS

The Court and the parties agreed upon certain abbreviations and citation forms for purposes of the findings. The abbreviations used by the Court:

Aff.	Affidavit
App.	Appendix
ARAR	Applicable or Relevant and Appropriate
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DE	Defense Exhibit
Decl.	Declaration
DNAPL	Dense Non-Aqueous Phase Liquids
DOJ	Department of Justice

EPA	United States Environmental Protection Agency
ft.	Feet
fig.	Figure
gals.	Gallons
GE	Government Exhibit
HSC	Hardage Steering Committee
LNAPL	Light Non-Aqueous Phase Liquids
NAPL	Non-Aqueous Phase Liquids
NCC	North Criner Creek
NCP	National Contingency Plan
OSDH	Oklahoma State Department of Health
OSHA	Occupational Safety and Health Administration
%	Percent
PCB	Polychlorinated biphenyl
¶	Paragraph
ppb	Parts per billion
ppm	Parts per million
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
SARA	Superfund Amendments and Re-authorization Act of 1986
US	United States
VOCs	Volatile Organic Compounds
yrs.	Years

Following is an explanation of the citation forms used in this Order.

Affidavits

_____ Aff. at _____

Witness' Last Name Page

Declarations

_____ Decl. at _____

Witness' Last Name Page

Rebuttal Affidavits

_____ R. Aff. at _____
Witness' Last Name Page

Rebuttal Declarations

_____ R. Decl. at _____
Witness' Last Name Page

Supplemental Rebuttal Affidavits

_____ S. R. Aff. at _____
Witness' Last Name Page

Supplemental Affidavits

_____ S. Aff. at _____
Witness' Last Name Page

Supplemental Declarations

_____ S. Decl. at _____
Witness' Last Name Page

Stipulated Cross-Examinations

_____ Stip. Cross at _____
Witness' Last Name Page

Trial Transcripts

_____ at _____
Volume Page

Orders, Briefs, Motions, and Memoranda

_____ at _____ (____) (_____)
Designation on document Page or subdivision Date Filing number

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See Uniform Abbreviations filed December 26, 1989. These abbreviations will be utilized by the Court in this Order.

IV. STIPULATIONS

A number of stipulations among the parties expedited the trial. Because some of the stipulations assist in a fuller understanding of the case, they are set out in their entirety. However, because of their length, the complete stipulations are attached as exhibits. The Court adopts all of the stipulations for purposes of this Order.

The stipulations [15] are contained in the following pleading filed in this case:

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[15] Because portions of these stipulations will be helpful to an understanding of this Opinion, the above stipulations, absent the

Pleading	Filing Number	Filing Date
Supplemental Joint Statement of Uncontested Facts.[16]	2212	11/21/89
Supplemental Joint Stipulation [17]	2233	11/22/89
Stipulation Regarding Analytical Data: Samples On Which The Parties Agree [18]	2201	11/17/89
Stipulation Regarding Analytical Data: Samples On Which the Parties Disagree.[19]	2190	11/17/89

V. ADDITIONAL PROCEDURAL HISTORY AND BACKGROUND

A. *Site Location and Operating History*

Defendant Royal N. Hardage owned and operated a waste disposal site located in rural McClain County, Oklahoma, approximately 15 miles southwest of Norman and one-half of a mile west of Criner. The Oklahoma State Department of Health ("OSDH") permitted the Hardage/Criner site as an Industrial Hazardous Waste Land Disposal Facility in September 1972. The site began operating in September 1972 and closed in November 1980.

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supporting data, are attached to this Order as Exhibits B, C, D, and E. The complete stipulations and supporting data accompany the original filings, which remain in the custody of the Clerk of the United States District Court for the Western District of Oklahoma.

[16] *See* Exhibit B. This stipulation superseded a November 17, 1989, Joint Statement of Uncontested Facts.

[17] *See* Exhibit C.

[18] *See* Exhibit D.

[19] *See* Exhibit E.

Over the eight-year period of operation, in excess of 20 million gallons of waste were transported to the Hardage Site for storage and/or disposal. Supplemental Joint Statement of Uncontested Facts para. 48 (Nov. 21, 1989) (filing No. 2212). Originally, liquids and sludges from drums and tank trucks were discharged directly into unlined pits. As disposal areas filled, wastes were transfered to other areas. Later, drums were no longer emptied, but piled into what became the drum or barrel mound. Ultimately, the site consisted of chemical impoundments including the large unlined, unsealed "main pit," a series of small temporary pits, and two large mounds ("barrel" and "sludge" mounds).[20] The types of waste generally accepted at the site included: oil recycling wastes, acids, caustics, lead, cyanide, arsenic, pesticides, PCBs, and other substances. The Record of Decision ("ROD") describes in detail other types of wastes accepted at the site, along with the hazardous contaminants present at the site. *Id.* at 3.2.

B. *Enforcement History*

In 1978, the State of Oklahoma filed complaints against the facility for suspected lead poisoning of the air around the site. In September 1979, the OSDH began proceedings to revoke the facility permit as a result of Mr. Hardage's use of unpermitted pits, his failure to seal permeable lenses in the pits, his improper closure of pits, his failure to retain runoff, and his improper storage of wastes at the site.

During 1979, preliminary Environmental Protection Agency ("EPA") investigations and inspections of the site indicated poor waste management practices posing threats to public health and welfare and the environment. In September 1980, the United States Department of Jus-

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[20] For a complete description of the operating history, see the EPA Summary of Remedial Alternatives Selection for Source Control sec. 2.0 (Nov. 14, 1986), in Defense Exhibit No. 100.

tice ("DOJ") filed suit in *United States v. Hardage* [21] on behalf of the EPA against Mr. Hardage, the site owner. The complaint alleged violations of section 7003 of the Resource Conservation and Recovery Act ("RCRA"). 42 U.S.C. § 6973, and sought injuntive relief for proper cleanup and closure of the site. Following the passage of CERCLA, the United States amended its complaint in June 1982 to add claims for injunctive relief under section 106 of CERCLA, 42 U.S.C. § 9606, and for cost recovery under section 107, 42 U.S.C. § 9607.

The Court bifurcated the trial in *Hardage I* to consider Mr. Hardage's liability first, and then to determine the proper remedy and costs incurred or to be incurred in any cleanup. On December 13, 1982. United States District Judge Lee R. West entered his findings of fact and conclusions of law in *Hardage I*. The Court found contamination of soil and groundwater as well as releases of contaminants into the air. The Court concluded that the Hardage Site was dangerous and found Mr. Hardage individually liable under section 7003 of RCRA and section 106 of CERCLA. However, because the remedial phase of the trial remained, the Court entered no judgment on the injunctive claims. *United States v. Hardage*, 18 Env't Rep. Cas. (BNA) 1687, 1696 (W.D.Okla.1982). On August 19, 1983, the Court entered a partial judgment under section 107 of CERCLA against Mr. Hardage for $211,795, which represented the United States' response costs incurred through December 1982. The United States thereafter sought to identify Mr. Hardage's assets and to obtain payment under the partial judgment. However, Mr. Hardage filed for bankruptcy on January 28, 1985, in the Bankruptcy Court for the Western District of Oklahoma, and received a discharge in bankruptcy on June 24, 1985.

After the Court's liability ruling in *Hardage I*, the EPA continued to study the Hardage Site through investiga-

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[21] No. CIV-80-1031-W (W.D.Okla. filed Sept. 8, 1980) [hereinafter *Hardage I*].

tions and administrative review. The EPA prepared a feasibility study to evaluate alternative remedial actions to clean up the Hardage Site from technical, environmental, and cost-effective perspectives. The EPA conducted studies of the Hardage Site in 1982, 1983, and 1984. The studies concluded that substantial work would be necessary to clean up the Hardage Site. In addition, the United States sought to identify other parties responsible for the contamination, in light of Mr. Hardage's financial difficulties.

As the EPA compiled available records from site operations, numerous Potentially Responsible Parties ("PRPs") were identified. In December 1984 the EPA notified numerous companies, pursuant to section 104 of CERCLA, 42 U.S.C. § 9604, of their status as PRPs pursuant to section 107 of CERCLA, 42 U.S.C. § 9607.

Following Mr. Hardage's discharge in bankruptcy, the United States requested, and the Court on July 18, 1985, issued, an order administratively terminating *Hardage I*. The administrative closing was ordered without prejudice to the rights of the parties to reopen the proceedings by April 1, 1986, "for good cause shown, for entry of any stipulation or order, or for any other purpose required to obtain a final determination of the litigation." On March 27, 1986, the United States moved to reopen the proceedings and to amend its complaint in *Hardage I*. The United States sought to add as party defendants various generators and transporters of the hazardous substances located at the Hardage Site. The Court denied the United States' motion and dismissed the case on April 1, 1986. The dismissal was without prejudice to the United States' rights to collect the earlier judgment against Mr. Hardage, or to join Mr. Hardage in any subsequent action, other than a money judgment, deemed "necessary to allow EPA or its designees to remediate or respond to conditions at the Site or take actions necessary to protect the public health, welfare or the environment."

On June 25, 1986, the United States filed the instant action, *United States v. Hardage*,[22] against 32 generators and three transporters, each of whom allegedly shipped between 100,000 and 1.7 million gallons of hazardous wastes to the site. The United States also sued Mr. Hardage for the limited purposes specified in the Court's earlier dismissal. As in *Hardage I*, the complaint in *Hardage II* sought injunctive relief under section 7003 of RCRA and section 106(a) of CERCLA to require the defendants to clean up the site, and to recover costs incurred by the United States under section 107 of CERCLA.

Most of the original defendants in *Hardage II* organized themselves as the HSC defendants. The HSC's answer in *Hardage II* asserted numerous affirmative defenses and counterclaims against the United States. The HSC defendants in turn brought a third-party complaint against approximately 180 additional third parties for contribution, and to obtain reimbursement of the HSC's costs expended in taking response and remedial actions at the Hardage Site.

C. *Bifurcation of Case*

In a Case Management Order issued on March 26, 1987, the Court bifurcated the case into two phases, with the Liability Phase to be tried prior to the Remedy Phase. Case Management Order at 7. The allocation of the ultimate cost of any court-ordered cleanup would follow later. Most of the defendants, however, stipulated to liability under sections 106 and 107 of CERCLA. As a result, the Court, in entering judgment as to the HSC defendants' liability on November 10, 1988, amended its Case Management Order to provide for the Remedy Phase to be tried as Phase I. Judgment and Order (Nov. 10, 1988) (filing No. 1553). The Court's judgment also

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[22] No. CIV-86-1401-P (W.D.Okla. filed June 25, 1986) (filing No. 1) [hereinafter *Hardage II*].

delineated the scope of the Phase I trial. The trial was to include "issues of appropriate response-remedial measures" for the Hardage Site, "the entitlement to and amount of response costs, if any, and the extent, if any, of [the United States'] liability" pursuant to the defendants' counterclaims and affirmative defenses. *Id.* at 3. The Court indicated that Phase II of the trial would determine whether defendants, other than the HSC, were liable under sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607.[23] The judgment also indicated that any trial of cross-claims or third-party claims for contribution would be separate from the United States' action and would not commence until Phases I and II were completed.

D. *Alternate CERCLA Cleanup Provisions*

The CERCLA provides the United States with three alternate methods of providing for the cleanup of hazardous waste sites. Section 104(a) permits the government to use Superfund [24] monies to clean up sites, and then to seek recovery of the response costs from responsible parties under section 107(a). Section 106 provides two other methods for site cleanups when the EPA determines that the site conditions "may [pose] an imminent and substantial endangerment to the public health or welfare or the environment." 42 U.S.C. § 9606(a) (1982). Section 106(a) permits the EPA either (1) to require the Attorney General "to secure such relief as may be necessary to abate such danger or threat" by filing a civil action in federal district court seeking an injunction to compel responsible parties to perform such relief, or (2)

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[23] The liability trial (Phase II) of this matter was conducted from April 23-25, 1990.

[24] The Superfund, formerly known as the Hazardous Substance Response Trust Fund established by section 221, 42 U.S.C. § 9631, continued as the "Hazardous Substances Superfund" under section 517 of SARA, 100 Stat. 1613, 1772, which added section 9507 to the Internal Revenue Code of 1986.

to issue administrative orders "as may be necessary to protect public health and welfare and the environment." *Id.*

The EPA studied and investigated the Hardage Site and incurred response costs in the process. However, the EPA did not clean up the site itself under section 104(a) of CERCLA. Instead, the United States pursued injunctive relief, in *Hardage I* against Mr. Hardage and in this case against the generators and transporters of hazardous substances, to require the defendants to clean up the Hardage Site. 42 U.S.C. § 9606 (1982 & Supp. V 1987). This distinction is significant, because the scope of the remedy trial conducted in December 1989 was determined directly by the EPA's pursuit of injunctive relief and by earlier rulings of this Court concerning the scope of review of the EPA's selection of response actions.

E. *Scope of Review of the EPA's Remedy Selection*

Throughout this proceeding, the United States has advocated that the scope of judicial review of the EPA's remedy selection for the Hardage Site should be restricted to review of the administrative record on an arbitrary and capricious standard. However, on three separate occasions, the Court ruled that the scope of review would be *de novo* review of any remedy suggested by the EPA.

The record review issue first arose in the context of the United States' November 17, 1986, motion for protective order, which sought to limit the scope of deposition discovery by defendants of two contractors employed by the EPA to aid in developing a remedy. Judge West, on December 11, 1986, denied the motion for protective order. *United States v. Hardage*, 25 Env't Rep.Cas. (BNA) 1343, 1986 WL 647 (W.D.Okla.1986). The Court emphasized that the administrative record had not yet been filed. *Id.* at 1344. The Court found that the SARA record review provisions were not applicable to the United States' claim for injunctive relief under sec-

tion 7003 of RCRA. *Id.* at 1344-45. In addition, the Court held that restrictions on judicial review did not apply to injunctive actions generally. *Id.* at 1345. The Court also concluded that the provisions of the Administrative Procedure Act were inapplicable. *Id.* Judge West ruled that section 106 injunctive claims "must be resolved in traditional trials by federal district courts after full discovery." *Id.* The Court further concluded that the "defendants are entitled to *de novo* review of any suggested remedy by EPA at the Hardage site." *Id.*

On April 9, 1987, the Court denied the United States' motion for reconsideration. *United States v. Hardage*, 663 F.Supp. 1280, 26 Env't Rep.Cas. (BNA) 1053 (W.D.Okla.1987). The Court ruled, in addition to its prior-stated rationale, that SARA record review provisions could not be applied retroactively to actions filed before the passage of SARA, and that a restricted judicial review of the EPA's remedial decision raised due process concerns. *Id.* 663 F.Supp. 1280, 26 Env't Rep.Cas. (BNA) at 1055, 1059-61. The Court also distinguished injunctive actions brought in federal district court pursuant to section 106 of CERCLA from those brought administratively under section 106 for injunctive relief, and from actions for cost recovery under section 107 in instances in which the EPA funds site cleanups. *Id.* 663 F.Supp. 1280, 26 Env't Rep.Cas. (BNA) at 1056.

Once it was compiled, the United States certified to this Court on March 15, 1988, the administrative record supporting the EPA's November 14, 1986, ROD. The United States then moved for the Court to restrict judicial review of the EPA's remedial decision to the administrative record. On March 15, 1988, the United States also moved to dismiss its count based on section 7003 of RCRA.

On July 14, 1988, this Court granted dismissal of the RCRA count. However, in a minute order dated September 9, 1988, the Court denied the United States'

motion for record review, citing the Court's prior decisions on the motion for a protective order, dated December 11, 1986, and April 9, 1987. The Court also found as a matter of law that section 106 claims "must be resolved in traditional trials by federal district courts after full discovery, and that retroactive application of Section 113(j) of SARA is improper." Minute Order Sept. 9, 1988) (filing No. 1435). On September 9, 1988, the Court issued an accompanying memorandum decision stating that reversal of the Court's earlier rulings concerning the scope of review was not warranted by the United States' withdrawal of the claim based on section 7003 of RCRA or by the United States' filing of the administrative record in March of 1988. Order on Motion to Restrict Review (Sept. 9, 1988) (filing No. 1434).[25]

Accordingly, the Remedy Phase proceeded to trial with this Court conducting a *de novo* review of the United States' proposed remedy for the Hardage Site. However, under any standard of review, the Court's decision on the remedy would have been the same.

F. *Special Master*

Early in this litigation, the Court recognized that the complexity of the issues, the number of parties, and the need to expedite matters to ensure protection of the public welfare might require the appointment of a special

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[25] The United States requested amendment of the Court's September 9, 1988, order to allow certification of the record review question for interlocutory appeal pursuant to 28 U.S.C. § 1292(b). This Court initially allowed an interlocutory appeal on November 23, 1988, based upon trial estimates of from 6 to 10 months. Order Allowing Interlocutory Appeal (Nov. 23, 1988) (filing No. 1559). However, upon reconsideration, the Court withdrew its interlocutory appeal certification when trial estimates agreed upon by the parties reflected 52 days or less for trial. Minute Order (Jan. 11, 1989) (filing No. 1594).

master under the provisions of Rule 53 of the Federal Rules of Civil Procedure. Toward that end, at a status conference on September 3, 1986, the Court directed the parties to submit a list of the names of 10 persons they believed would be qualified to serve as a special master. On October 1, 1986, the parties filed their lists of suggested candidates for special master. In addition, the United States supplemented its submission with the policy of the Attorney General of the United States on the use of special masters. The United States opposed the use of a special master as a technical advisor to the Court, but agreed a master might help resolve discovery disputes and could assist with the settlement process.

After interviewing candidates for the position of special master, on February 25, 1987, the Court issued an order citing the following reasons for appointing a special master.[26]

(1) The case would require urgent resolution due to a threat to the public welfare.

(2) Analysis of technical and scientific data would be required to determine complex issues of liability and apportionment.

(3) Issues would be complicated by the number of parties and the commingling of the waste.

(4) The vast amount of evidence necessary to litigate this case would result in extensive discovery which would require almost constant supervision.

In the order, the Court appointed Alexander H. Danzberger as a special master for the *Hardage* case. The order delineated the master's duties and authority. Order of Reference to Special Master at 12-13. In addition, the Court established a Master's Reimbursement Fund of

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[26] Order of Reference to Special Master at 9 (Feb. 25, 1987) (filing No. 166).

$70,000 to meet the expenses of the master during his term of service to the Court.

During his three years as special master, Mr. Danzberger:

(1) Conducted formal hearings on the record at the Court's direction concerning the proposed Case Management Order and assisted in a hearing on a temporary restraining order on drilling at the site.

(2) Served as hearing officer on pretrial matters.

(3) Provided negotiation assistance to facilitate agreement on the Consent Decree for HSC's performance of the Second Operable Unit Remedial Investigation/Feasibility Study—Management of Migration.

(4) Recommended settlement strategies in magistrate's hearings.

(5) Facilitated discussion between the parties on site characterization issues, on interpretation of scientific data, and on the extensiveness of remedy requirements.

(6) Provided periodic reports to the Court regarding litigation progress.

The Court publicly expresses its appreciation of Mr. Danzberger's service as special master. His efforts have facilitated open discussion between the parties, have aided in narrowing technical issues, and have streamlined the efficiency of this litigation. Because of the scope of review of the Remedy Phase, Mr. Danzberger played no role in that trial or in the preparation of this Order.

VI. WITNESSES CALLED BY THE PARTIES

The Court began receiving testimony in this case on November 27, 1989. The parties called the following witnesses:

A. Witnesses Called by the Government and Consent Decree Parties

Witness Name	Employer	Business, Profession or Occupation [27]	Date of Testimony
1. Kirk W. Brown	Texas A & M University	Professor of soil and crop sciences; soil physicist	November 27, December 1, 1989
2. Marc A. Jewett	CH2M Hill, Inc.	Senior hydrogeologist and project manager	November 27, 1989
3. Joseph P. Danko	CH2M Hill, Inc.	Process engineer/project manager; chemical engineer in the industrial processes and hazardous waste division	November 27, 1989
4. Harold W. Bentley	University of Arizona	Associate adjunct professor; hydrogeochemist	November 27, 1989
5. Annette M. Shipp	Clement Associates	Vice president; toxicologist	November 27-28, 1989
6. Murdock John Cullinane, Jr.	United States Army Corps of Engineers	Research civil engineer, Waterways Experiment Station, Vicksburg, Mississippi	November 28, 1989
7. Mary Ann Heaney	U.S. Pollution Control, Inc.	Manager of health and safety; industrial hygienist	November 28, 1989
8. Steven A. Beck	U.S. Pollution Control, Inc.	Regional project manager for remedial services	November 28, 1989

9.	Ilene Whitehead	Self-employed	Co-owner of a family dairy farm located near the Hardage dump site	November 29, 1989
10.	Samuel Royce Smith	Eastern Avenue Baptist Church, Moore, Oklahoma	Associate pastor and Christian academy headmaster whose mother owns a farm near the Hardage Site	November 29, 1989
11.	Robert W. Davis	CH2M Hill, Inc.	Manager, Industrial Process Group; civil engineer	November 29, 1989
12.	Robert A. Griffin	Illinois State Geological Survey: R.A. Griffin & Associates	Principal Geochemist and Branch Chief of the Environmental Geology and Geochemistry Branch of the Illinois State Geological Survey; principal	November 29, 1989
13.	Gary R. Walter	Hydro Geo Chem	Registered geologist; hydrologist	November 29, 1989
14.	John B. Robertson	HydroGeoLogic, Inc.	Principal hydrogeologist and executive vice president	November 29-30, 1989
15.	Thomas A. Prickett	Thomas A. Prickett & Associates, Incoporated	President; water resources engineering consultant	November 30, 1989
16.	Peter R. Jaffe	Princeton University	Assistant professor, Department of Civil Engineering and Operations Research	November 30, 1989
17.	John M. Bruck	Bruck, Hartman & Esposito, Inc.	President and chairman; registered professional civil engineer; consultant in environmental management science and engineering	November 30, 1989

Witness Name	Employer	Business, Profession or Occupation [27]	Date of Testimony
18. Allyn M. Davis	United States Environmental Protection Agency	Director, Hazardous Waste Management Division	November 30, 1989
19. Eugene Meyer	Meyer Environmental Consultants, Inc.	President; process chemist	December 1, 1989
20. William Cooke	United States Environmental Protection Agency	Chief of the cost accounting and reporting section, Office of the Controller; certified public accountant	December 1, 1989
21. Patrick A. McGeehin	Rubino & McGeehin, Chartered	Cofounder and partner; certified public accountant	December 1, 1989
22. Joseph Menchacs	Ernst & Young	Partner, management consulting division; certified public accountant	December 4, 1989

B. Witness Called by the Defendants

Witness Name	Employer	Business, Profession or Occupation	Date of Testimony
1. Mark S. Coleman	Oklahoma State Department of Health	Deputy Commissioner for Environmental Health Services	November 28, 1989
2. Robert H. Harris	ENVIRON Corporation	Principal and senior vice president; environmental engineer	November 28, December 11, 1989

[27] Some of the descriptions in this category do not do justice to the witnesses' qualifications. Many witnesses who testified had expertise in several fields. This summary is for overview purposes only.

3.	Richard C. Bost	ERM-Southwest, Inc.	Principal and project manager; environmental engineer and certified ground water professional hydrogeologist	November 28, December 11, 1989
4.	Gary R. Hecox	IT Corporation	Senior staff consultant in hydrology	November 28, December 7, 1989
5.	James K. Mitchell	University of California, Berkeley	Professor of civil engineering; independent geotechnical engineering consultant	December 1, 1989
6.	Stephen Hahn (by deposition)	CH2M Hill, Inc.	Regional manager; geotechnical and structural engineer	December 4, 1989
7.	J. Mark Schmittle	ERM-Southwest, Inc.	Senior hydrogeologist	December 4, 1989
8.	W. Scott Keys	Private consultant	Consultant in borehole geophysics applied to the solution of groundwater problems	December 4, 1989
9.	Stavros S. Papadopulos	S.S. Papadopulos & Associates, Inc.	President; registered professional engineer	December 4, 1989
10.	Steven P. Larson	S.S. Papadopulos & Associates, Inc.	Vice president; groundwater hydrologist	December 6, 1989
11.	George E. Hoag	University of Connecticut; Vapex Environmental Technologies, Inc.	Director of the Environmental Research Institute and associate professor of civil engineering; director and founder of Vapex	December 6, 1989

Witness Name	Employer	Business, Profession or Occupation	Date of Testimony
12. R. Leonard Allen	IT Corporation	Senior project director, Landfill Engineering Group; registered civil engineer; registered geotechnical engineer	December 6, 1989
13. Richard A. Brown	Groundwater Technology, Inc.	Director of Chemical Technology	December 7, 1989
14. Thomas A. Matunas	Coopers & Lybrand	Senior audit partner; certified public accountant	December 11, 1989
15. Benjamin Costello, III	Applied Hydrology Associates, Inc.	Principal and president; hydrologist	December 11, 1989
16. John A. Cherry	University of Waterloo, Ontario	Professor of hydrogeology; self-employed consulting hydrogeologist	December 12, 1989
C. Rebuttal Witnesses Called by the Government			
1. Benjamin Burrell (by affidavit)	United States Department of Justice	Director of the Facilities and Administrative Services Staff, Justice Management Division	December 12, 1989
2. Thaddeus L. Juszczak, Jr. (by affidavit)	United States Environmental Protection Agency	Director of the Resource Management Staff, Office of Solid Waste and Emergency Response	December 12, 1989
3. Manfred van der Walde	General Services Administration	Director, Financial Management Division	December 12, 1989

4. Harold W. Bentley	University of Arizona	Associate adjunct professor; hydrogeochemist	December 12, 1989
5. Jere A. Strickland	Chen-Northern	Civil engineer	December 12, 1989
6. Melvin L. Ritter	United States Environmental Protection Agency	Organic analytical chemist	December 12, 1989
D. Sur-Rebuttal Witnesses Called by the Defendants			
1. Steven P. Larson	S.S. Papadopulos & Associates,Inc.	Vice president, groundwater hydrologist	December 13, 1989

VII. FLAWS IN THE GOVERNMENT'S PROPOSED REMEDY

A. *Overview*

1. The primary basis for the Court's rejection of the government's proposed remedy and its selection of the HSC remedy is fairly straightforward. The heart and soul of the government's proposed remedy is excavation. While the Court was impressed with a number of the government's soil vapor extraction witnesses, the Court was not persuaded at all by the few witnesses called by the government and the Consent Decree parties who testified in support of the appropriateness, feasibility, and safety of excavation. Other reasons for the Court's remedy preference include the State of Oklahoma's opposition to the government's excavation proposal, the lack of due consideration given to the views of state authorities, the ambiguity of the excavation proposals presented in the government's case, the unreliability of the government's estimates concerning the number of intact drums in the main pit and barrel mound areas, the vacillating nature of the government's proposed remedy, and the observations found in government documents concerning excavation and containment remedies at the Hardage Site. There are also other flaws in the government's remedy that are discussed more fully below.

2. The Court believes the public health, safety, and welfare and the environment are best served by the modified HSC remedy that will be ordered by the Court. The Court thus finds that the government has failed to establish the excavation aspect of its proposed remedy by a preponderance of the evidence. The Court also finds that excavation is similarly inappropriate for purposes of the Consent Decree.

3. While the Court considered studying the possibility of utilizing soil vapor extraction in connection with the

HSC remedy, a review of all of counsels' closing arguments and final comments to the Court,[28] as well as certain evidentiary factors identified by Dr. Richard Brown on December 7, 1989,[29] and testimony by other witnesses cited below, persuaded the Court that it should not attempt a hybrid remedy or include soil vapor extraction as part of the remedy ordered for the Hardage Site. Accordingly, there will be no soil vapor extraction component in the remedy ordered by the Court.

B. *Vacillating Nature of the Government's Remedy*

1. The government's proposed remedy changed so many times during the course of this litigation, and in such drastic measures, that the Court lost confidence in the deliberative process underlying the government's final proposal. The government's final proposed remedy came so late in the litigation that the Court has difficulty believing that it was carefully considered.

2. Despite years of preparation, partial excavation combined with soil vapor extraction was not announced as a part of the EPA's trial remedy until October 1989. GE 2 sec. 3.2.4, at 3-36.

3. The EPA's ROD that contained the government's selected remedy was not filed until November 22, 1989. This was the Wednesday before the Thanksgiving holiday. The trial of this case began on November 24, 1989, at 7:30 a.m., the Friday after the Thanksgiving holiday. Allyn Davis, the EPA's director of hazardous waste management for Region VI, signed the EPA's ROD two hours after giving his deposition on November 24. It was not provided to defense counsel until the eve of the trial. The ROD contains boxes and boxes of materials. V at 1160-63.

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[28] *See, e.g.*, XII at 2344.

[29] IX at 1730-49.

4. The vacillating nature of the government's proposed excavation remedy is demonstrated by comparing the deposition testimony of the EPA hazardous waste director, Mr. Davis, on November 22, 1989, with his trial testimony on November 30, 1989. V at 1162-67; VI at 1191-96. Also the earlier EPA proposals involved excavating more than the barrel mound and main pit. V at 1125, 1130, 1134. The earlier EPA proposals advanced a "pin cushion" theory, under which the source areas would be lanced and drained. This proposal was abandoned prior to trial. IV at 873-74; V at 1135-36. Unfortunately, it is extremely difficult for the Court to evaluate a proposed excavation plan until the government has decided on an excavation proposal. V at 1117. Various government witnesses advanced more than three excavation proposals. V at 1103-04.

5. The government's risk assessment was based on an approach, suggested in the government's remedy design report, involving the extraction of liquids through wells prior to extraction; but that method was not advanced as part of the government's trial remedy. GE 2 sec. 3.2.4, at 3-36; III at 450.

6. On the morning of December 1, 1989, upon questioning by the Court, defense counsel pointed out the different inconsistencies between Mr. Davis' testimony, the EPA's ROD, and the government's proposed remedy. Government counsel acknowledged that there was an "error in the draftsmanship" of the ROD in that the ROD suggested vertical extraction well in all three source areas, as well as pooled liquids in all three source areas, concepts clearly inconsistent with the government's trial remedy. VI at 1191-96 V at 1162-67.

7. The government's changing remedies also adversely affected its evidentiary presentation at trial. One conceptual difficulty with the government expert's soil vapor excavation feasibility model was that the model was prepared when the EPA's lancing remedy was under con-

sideration. This soil vapor extraction model, which was based upon a lancing theory, was not changed after the EPA's excavation remedy displaced the lancing remedy. IV at 873-74; XII at 2359-60. *See* IV at 801.

C. *The Excavation Component of the Government's Remedy*

1. In addition to the remedy components suggested by the HSC, the remedy for the Hardage Site proposed by the EPA includes partial excavation of materials from the barrel mound and main pit, and soil vapor excavation in the barrel mound, main pit, and sludge mound. GE 2 at 2-1 to -4.

2. Excavation to remove buried hazardous wastes has been successfully implemented as a remedial measure at various hazardous waste sites around the country.

3. Excavation of buried hazardous wastes, including drums, is a recognized method of remediating hazardous waste sites. R. Davis R.Aff. at 3; V at 1098.

4. It is estimated that approximately 18,000 drums are buried in the barrel mound and the main pit. Supplemental Joint Statement of Uncontested Facts para. 81.

5. At the outset of the trial, the Court was logically and conceptually attracted to the government's excavation remedy. Although countered by defense experts, three impressive government witnesses (Dr. Kirk W. Brown, Thomas Prickett, and John Robertson) testified that the contamination was spreading at the Hardage Site and that excavation would remove the bulk of the waste from the source areas before the contamination could spread further. None of these three witnesses, however, were presented to the Court as excavation experts. Indeed, had the government followed up these conceptual presentations with credible evidence concerning the feasibility, safety, and appropriateness of excavation at the Hardage Site, a different result might have occurred. It

was in the practical aspects of excavation at the Hardage Site that the government's case fell apart.

6. The government called two witnesses to testify to the practical aspects of excavating the Hardage Site, Robert Davis and John Bruck. Also, a Consent Decree party, United States Pollution Control, Inc. ("USPCI"), called Steve Beck to testify on the same point. By agreement of all parties, Mr. Beck's testimony was to be considered by the Court for trial purposes as well as for the Consent Decree. The testimony of these witnesses totally failed to convince the Court that excavation was an appropriate remedy for the Hardage Site. In fact, this testimony convinced the Court of precisely the opposite—that the government's proposed excavation plan was totally inappropriate for the Hardage Site.

7. The three government witnesses who testified about the planned excavation at the Hardage Site each described a different approach. V at 1103-04; IV at 745-50; III at 541-46.

8. The failure of the government to present a detailed, consistent proposal for drum excavation, an ultrahazardous activity, raises serious questions about the ability of the EPA to implement excavation safely at the Hardage Site. V at 1117.

9. Photographs of site operations indicate that intact drums were disposed of in the barrel mound and in the main pit in a haphazard fashion. DE 30 tab D. A recent test excavation in the main pit indicates that some intact drums remain buried. DE 168.

10. The barrel mound and the west side of the main pit were constructed haphazardly, resulting in drums lying in disarray within voids and channels within and around them. Schmittle Decl. at D-21 to -22; DE 30 tab D.

11. Excavation is not an appropriate remedy for the Hardage Site because of the way the drums were deposited and dumped. DE 30 tab D. At other hazardous waste sites, drums or barrels are placed in specific locations in a specific array. The placement of drums at the Hardage Site, however, was random. *Id.* IV at 752-829. The OSDH opposes the EPA remedy primarily because of the proposed excavation. Coleman Decl. at B-5; III at 588-620.

12. The OSDH is the agency of the State of Oklahoma, which is responsible for regulating the management and disposal of its hazardous waste, that should ensure the protection of the public health and welfare and the environment. The OSDH is the designated Superfund agency within the state. *See* Okla.Stat. tit. 63, §§ 1-2001 to -2021 (1981 & Supp.1987).

13. Before its trial remedy report was issued, the EPA had no discussions directed toward obtaining the OSDH's views on the proposed excavation remedy. III at 610-11.

14. The EPA had not sought the OSDH's views prior to selecting the excavation and vault remedy announced in the EPA's 1986 ROD. Coleman Decl. at B-3.

15. The OSDH vigorously opposed excavation of the barrel mound and main pit, believing that harmful vapors could be released from the site and that fires of explosions could occur. Coleman Decl. at B-5; III at 588, 590, 620.

16. Excavation is not an appropriate remedy because of the inaccurate nature of the government's estimates of the number of drums in the main pit and the barrel mound, and the speculative nature of the assumptions regarding the number of drums deposited at the Hardage Site that have ruptured and leaked. IV at 752-833; III at 565-66; VI at 1246-49; V at 1162-70.

17. Excavation experience at other sites suggests that only a small portion, less than 10%, of the drums remain

intact and full of liquid. III at 560-62. The government's assumption that more than 12,000 of the estimated 18,000 barrels at the site are full to the brim is fatally flawed. IV at 755-56, 739-833; III at 565-66.

18. Given the manner in which drums were thrown into the Hardage Site, many drums cannot be removed mechanically and placed into overpack drums without workers physically handling the drums. III at 522-53; 583; V at 1124-25. This poses serious risks to the handlers.

19. Although many buried drums can be detected as excavation proceeds using subsurface instrumentation, this instrumentation does not describe the nature of a buried drum, the extent to which it has collapsed, and the extent to which the workers may be exposed to contaminants as it is recovered.

20. Certain estimates provided during the testimony of government witness Robert Davis on November 29, 1989, suggesting that there are 660,000 gallons of drummed liquids, are substantially inflated. The evidence, to the contrary, suggests that most of the liquids are in the "known pooled liquids" category. IV at 739-833.

21. A critical issue in this case is the number of buried drums at the Hardage Site that remain intact and that have not leaked or ruptured. Given the fact that the evidence strongly suggests that most such drums have ruptured or leaked in some fashion, the marginal utility of excavation as a remedy declines. The evidence suggests that most of the leaked materials can be recovered through the pumping of known pooled liquids. Both the government and the HSC remedies call for such pumping. The legitimate safety concern with respect to excavation at the Hardage Site, coupled with the marginal utility of excavation given the evidence regarding the number of ruptured drums, persuades the Court that excavation is not appropriate.

22. Contrary to what the EPA representatives told two citizen witnesses, excavation and soil vapor extrac-

tion will not remove 90% to 99% of the hazardous waste within 10 to 20 years. IV at 708-32. Groundwater and soil contamination problems will remain at the site forever. DE 175 at 3. Moreover, the Hardage Site can never be returned to its prewaste disposal condition under any remedy. V at 1174. The EPA simply supplied these citizens with copies of its experts' affidavits and persuaded them that the EPA remedy was the best remedy for the citizens living near the Hardage Site. Critical information was not supplied to these citizen witnesses. As a result the Court has placed little, if any, weight on this testimony in support of the government's excavation remedy.

23. It is likely that very few of the drums remaining at the Hardage Site contain liquids. Schmittle Decl. at D-21 to -22; DE 44 at 1, 7, table 1; DE 21 at 3-26, 4-1 to 4-2; DE 30 tab D. In another excavation effort, less than 500 drums were found intact in a 15,000 drum removal effort at a hazardous waste site. III at 560-62.

24. The review team leader for the EPA contractor responsible for preparing the 1986 Feasibility Sudy questioned the propriety of spending millions of dollars to remove the "source" of waste at the Hardage Site when the groundwater and soil contamination problems could never be eliminated. DE 175 at 3.

25. This review team leader of the EPA's draft feasibility study, Steven Hahn, a geotechnical engineer who worked on hazardous waste sites, felt that a "fatal flaw" in the feasibility study was that it did "not carry at least one containment alternative through detailed evaluation." DE 175 at 3. Mr. Hahn believed a viable containment alternative existed. He further noted that all of the excavation alternatives were "terribly expensive" and questioned the justification "for spending so much money on source removal, considering that extensive groundwater/soil contamination problems will remain at the site forever." *Id.* at 1, 3. This document was offered into evi-

dence by the HSC, and was received without objection. IV at 818-34.

26. Mr Hahn also pointed out the following with respect to the 18,000 drums "assumed" to be at the Hardage Site.

> I strongly suspect that most of these are empty now, or will be punctured and/or crushed in the process of excavating the landfill. That was our experience at Berlin and Farro.

DE 175 at 4.

27. Mr. Hannesschlager, a senior EPA enforcement official, in 1985 made a statement to the effect that the Hardage Site was not an imminent threat to the public. DE 174 at 3. In Mr. Davis' opinion, he was qualified to render such a view. Mr. Davis is the hazardous waste director for the EPA's Region VI. V at 1174-79.

28. Materials including DNAPL already have escaped from barrels outside the areas to be excavated, thus further reducing the viability of excavation. GE 19; IV at 830; V at 1163-64.

29. The Lyons Landfill site, upon which the government relied as an example of a successful drum excavation, involved fundamentally different conditions than those at the Hardage Site. Hecox R. Decl. at 3-4; III at 685-87.

30. The government's excavation expert, Mr. Bruck, acknowledged that the government had not yet completed detailed plans for excavation. Excavation, according to Mr. Bruck would fall into one of three approaches. He could not tell the Court which approach should be used. V at 1094-1140.

31. Soil removed from the excavation site would have to be removed, perhaps more than once. R. Davis Rebuttal Aff. at 3-4; V at 1104-05.

32. Construction of the EPA remedy would require workers to spend significantly more person-hours in Level A and Level B protective equipment. Because this equipment severely restricts a worker's mobility and leads to the buildup of heat within the equipment, implementation of the EPA remedy would increase the risk to workers of heat stress and heat stroke, particularly in the hot summer months. Harris Decl. at C-18 to -23; III at 641-43; DE 141; V at 1112-14.

33. Excavating and handling buried drums containing unknown and potentially ignitable, flammable, or reactive chemicals is an ultrahazardous activity. Harris Supp. R.Decl. at 2-3.

34. The testing of intact drums containing unknown substances is an ultrahazardous activity that threatens workers with risks of fire, explosion, and chemical reactions as drums are opened to sample their contents. Harris Supp.R.Decl. at 3.

35. Workers cannot be completely protected from the risk of injury or death if an explosion occurs during excavation. V at 1138; VI at 1236.

36. Although government witnesses assured the Court that measures would be taken to avoid subjecting workers to heat stress during the excavation, including training and scheduling work during cooler periods of the day or of the year, one excavation proposal envisioned workers in protective gear working in summer afternoons. GE 2 at 3-38; III at 523; Bruck Aff. at 4; V at 1105, 1107.

37. The government's excavation witness, Mr. Bruck, acknowledged that he had little on-site experience. His work as a program manager involved minimal on-site experience. He testified that two excavation shifts could be utilized, one in the early morning and one in the afternoon. The workers would wear level B protection. Level B protection is high-level protection, involving suits,

gloves, boots, respirators, etc. Level B protection poses heat stress problems for workers that can be alleviated by multiple work shifts. The notion, however, that workers could perform such work in Oklahoma in summer afternoon temperatures is at odds with the reality of the state's summer weather. Excavation difficulties would be compounded because Mr. Bruck expected to uncover the type of drum arrays depicted in Defense Exhibit No. 30, tab D. V at 1105-40.

38. During the summer and winter months it may not be practicable, or even possible, to work in Level B protection on many days or for extended periods of time. Harris Decl. at C-23; V at 1104, 1112.

39. In order to remove the drums during excavation, workers would necessarily have to handle drums physically and would work in close proximity to waste liquids and excavated drums. II at 206-07; V at 1129-30; DE 30 tab D; DE 44.

40. Because of the way the barrels were left at the Hardage Site (DE 30 tab D), the excavation would require some hand digging. The EPA proposes to use mechanized excavation to the maximum extent possible. V at 1093-1140.

41. Level A protection involves a fully contained, rubberized suit with a pressurized breathing apparatus. Level A gear provides more protection for the worker. The EPA's proposed remedy would require that more than 50% of the excavation work be performed in Level A gear. The government's excavation witness, Mr. Bruck, was not aware that the remedy report of the EPA and the Consent Decree require 50% of the excavation work to be performed in Level A gear. V at 1122.

42. The government's excavation plans are more properly characterized as being at a general philosophical stage rather than at a specific stage. V at 1136; III at 567. The workers performing the excavation, however,

realistically would be exposed to a serious risk. V at 1106-41. This Court is not prepared to risk the safety and lives of Oklahoma workers on such tenuous plans and proposals.

43. The government's remedy design document does not adequately describe the manner or method of excavation, or the actual procedures contemplated to address the risks of excavation. GE 2 sec. 3.2.4., at 3-36; V at 1106-41.

44 The drum excavation proposed by the EPA envisioned that the drums would be removed intact in order to avoid the release of liquids to the subsurface. II at 264. This plan is not supported by the likely condition of the remaining drums.

45. Drums encountered in the barrel mound would be in a deteriorated condition. Excavation could further crush or puncture the drums, causing substances in them to leak and react with potentially incompatible chemicals present at the site. Schmittle Decl. at D-21 to -22; DE 30 tab D; DE 44; DE 179; Hecox III at 690; III at 588-89.

46. There were substantial discrepancies among the government witnesses regarding the amount of exposed surface area for the excavation working face, the plan of excavation, the disposition of soil, and the number of times soil would be moved, all of which adversely affected the Courts' ability to estimate the risks associated with excavation. GE 2 at 3-36 to -39; III at 544, 545, 442-46, 644-68; IV at 778-83.

47. Emission control measures would have to be implemented to prevent dust and vapor emissions during the excavation. These measures would include vapor suppressant foams, and might also include wetting agents, plastic sheeting, visqueen, clean soil, and other materials. R. Davis R.Aff. at 3-4; Bruck Aff. 7; GE 2 at 3-38; III at 543; V at 1101. The government's nebulous plans

regarding this critical and dangerous aspect of excavation do not justify inclusion of excavation as a remedy component for the Hardage Site.

48. Because wind gusts are likely during any excavation of the Hardage Site, the proposed use of a plastic covering to control vapor emissions from stored materials is unlikely to succeed. Bruck Memo (Oct. 5, 1988) (attached to Administrative Record, GE 234).

49. Excavation-based remedies selected by the EPA at various other sites, including the Petro Processors and Rocky Mountain Arsenal sites, have been delayed or reconsidered because of unacceptable vapor emissions. Harris Decl. at C-7 to -8.

50. Excavation poses significant risks due to emissions. The dangerous short-term risk to workers is not outweighed by the alleged long-term benefits associated with excavation. The HSC risk expert, Mr. Harris, provided persuasive testimony to the Court regarding the dangers of excavation. III at 636-66. The Court found this testimony more persuasive than the testimony provided by the government's risk assesment expert. II at 409.

51. The EPA remedy includes certain remedy components—excavation of the barrel mound, removal of liquids by vacuum truck, transportation of excavated wastes to a staging area, and construction, operation, and maintenance of the soil vapor excavation system—that create significant implementation risks in addition to the risks created by the remedy components common to the EPA and HSC remedies. Harris Decl. at C-10 to -23; DE 140; III at 640, 643-44, 690-91.

52. Implementation of the government's excavation plan will result in significant risks to local residents. Off-site cancer risks associated with the EPA remedy are understated; estimates of the off-site cancer risks associated with the HSC remedy are likely overstated.

53. Excavation will present a risk of fire, explosion, and physical injury from direct contact with hazardous

wastes if incompatible wastes mix during the work. Harris Decl. at C-10 to -15; DE 140; III at 640, 643-44, 690-91; VI at 1231, 1233.23.

54. Excavation of the barrel mound/main pit to remove drums and drummed wastes will cause off-site releases of exceedingly toxic substances, such as asbestos, that can contaminate soil and surface water near the site. Those substances can persist long after the remedy is constructed. Harris Decl. at C-26, D-4.

55. The EPA failed to evaluate adequately the costs and risks associated with the handling, testing, storage, transportation, and incineration of drums, liquids, sludge, and other materials. Harris Supp. R.Decl. at 3.

56. The EPA's remedy would place workers in closer proximity to hazardous wastes than the HSC remedy. The EPA remedy thus carries with it a greater risk of workers coming into direct physical contact with hazardous wastes and of being involved in construction-related accidents. Harris Decl. at C-18 to -23; DE 141; III at 641-43; V at 1112-14.

57. Excavation of the barrel mound and main pit and soil vapor excavation in the source areas would result in more contaminants being released through vapor and dust emissions than will be released during construction of the HSC remedy. Harris Decl. at C-10 to -23; DE 140; III at 640, 643-44, 690-91.

58. Even after excavation, pumping, and soil vapor extraction 500,000 gallons of waste would remain at the Hardage Site under the EPA remedy. IV at 860.

59. Dr. Eugene Meyer assumed, as did other witnesses for the government, that all of the barrels of chemicals deposited at the Hardage Site were full to the brim based on the fact that Mr. Hardage charged his customers on a per barrel basis. The Court cannot accept this assumption. There is no way of determining from the logs the accuracy of the information as to what

was delivered to the site, as the Hardage log simply reflects what the Hardage employees were told when a load arrived. VI at 1245-49. Moreover, the assumption that these barrels remain intact and full today is without factual support.

60. Although drum removal and soil vapor extraction would reduce the volume of waste available for groundwater contamination, the site would not be cleaner as a result of soil vapor extraction and excavation in any time frame that can be envisioned. The site will always be contaminated. XI at 2092-2135.

61. The Court is not convinced by the testimony of the government witnesses that excavation of the barrel mound and portions of the main pit to remove buried drums and free-phase liquids can be implemented safely, minimizing or eliminating risks of injury to workers. Although Dr. Meyer is an exceptionally qualified and impressive witness in many areas, he has little expertise in any aspect of excavation, much less its practical aspects, and the Court has placed little weight on the government's effort to have him testify in this area.

62. Excavation of the barrel mound and certain portions of the main pit to remove buried drums and free-phase liquids is not a feasible remedial action for the Hardage Site. The government witnesses' primary point is that a worker's health and safety plan *can* be devised for the EPA's proposed remedy. III at 521-22; V at 1099. The Court, however, cannot order an excavation undertaking such as that proposed by the government (in any form) to proceed on the state of this record. The Remedy Phase was designated as the phase of this litigation in which the Court was to order a remedy for the site based on the evidentiary presentations of the parties. This Court has no intention of deferring a remedy decision to future excavation studies or plans that perhaps could be developed on any one of several excavation proposals. Cleanup at this site has been delayed

long enough. If excavation is an appropriate remedy for the Hardage Site, the government has had more than ample opportunity to prove it. This was not done during the Remedy Phase.

63. Section 106 of CERCLA, 42 U.S.C. § 9606, expressly provides the standard that a court must follow when awarding injunctive relief. That section states a court has "jurisdiction to grant such relief as the public interest and the equities of the case may require" in order to abate what may be "an imminent and substantial endangerment to the public health or welfare or the environment because of an actual or threatened release of a hazardous substance from a facility. . . ." 42 U.S.C. § 9606(a) (1982).

64. Insofar as the cleanup standards contained in section 121 of CERCLA and in the national contingency plan regulations are binding upon the Court, and insofar as these standards may be considered by the Court, they require rejection of remedies that do not meet the threshold standard of protecting the public health and welfare and the environment. *See, e.g.*, CERCLA § 121 (b), (d)(1); 40 C.F.R. § 300.68(a), (g)(3), (i)(1) (1989).

65. Excavation was developed and proposed as a remedy component without adequate consideration of site characteristics, and was based on incomplete information and incorrect assumptions about; (i) feasibility, effectiveness, benefits, and cost; (ii) the risk to workers and to the public from implementation; (iii) technical and practical compatibility with other remedy components; and (iv) the views of the State of Oklahoma. Bost Decl. at D-30 to -32.

66. The excavation remedy proposed by the EPA presents unacceptable risks to workers, to nearby residents, and to the environment and relies on unspecified approaches that are not cost-effective and that are otherwise inappropriate for conditions of the Hardage Site.

67. The EPA excavation remedy does not satisfy the threshold requirements of sections 106 and 121 of CERCLA and NCP standards for remedies that must protect the public health and welfare and the environment.

68. The CERCLA provides that states shall have the opportunity to review and comment on proposed remedial actions. It does not provide that states shall have a concurrent role in the selection of remedial actions. 42 U.S.C. § 9621(f)(1)(E) (Supp. V 1987).

69. The EPA has not provided the State of Oklahoma with an adequate opportunity to review and comment on the EPA's proposed remedy for the Hardage Site. III at 586-629; GE 234; V at 1149-89.

70. Failure of the EPA to consult adequately with the OSDH on selection of an appropriate remedy for the Hardage Site is inconsistent with the state consultation requirement contained in section 121(f) of CERCLA. Coleman Decl. at B-3 to -4.

71. A remedial action for the Hardage Site that is protective of human health and the environment and that is consistent with cleanup standards established by 42 U.S.C. § 9621 does not include excavation of the barrel mound and portions of the main pit to remove pooled liquids and liquids in drums.

72. Excavation and soild vapor extradition are not appropriate components of a remedy for the Hardage Site. Bost Decl. at D-7 to -11; Cherry Decl. at D-22; Harris Decl. at C-40; IX at 1737.

73. The unique nature of the Hardage Site renders excavation a poor remedy based on the evidence presented.

D. *The Soil Vapor Extraction Component of the Government's Remedy*

1. Soil vapor extraction is a remedial technology that has been developed to remove volatile organic compounds from unsaturated soils and transfer them to the airstream; the treatment is both effective and well-demonstrated. Walter Aff. at 4; Danko Aff. at 6; IV at 843.

2. By creating subsurface air flow zones, soil vapor extraction can, under appropriate site conditions, increase the rate at which volatile contaminants will be removed from the source areas. Walter Aff. at 6; Walter R. Aff. at 6-7; Bentley Aff. at 4; IV at 898.

3. Soil vapor extraction can, under appropriate site conditions, reduce or eliminate the production of certain degradation compounds that are highly toxic and mobile in the subsurface environment. Walter Aff. at 3, 10.

4. Having rejected excavation, there is little need for further discussion of the soil vapor extraction component of the government's remedy. Both a defense expert, Dr. Richard Brown, and government counsel have advised the Court against the idea of attempting to combine this feature of the government's remedy with the HSC remedy. IX at 1730-49; XII at 2344. Moreover, the rejection of excavation has not made soil vapor extraction more attractive for the Hardage Site.

5. The Court has little doubt that soil vapor extraction can be an effective and important remedial technology for a number of hazardous waste sites. Indeed, the OSDH, while opposing the EPA remedy, supports the concept of soil vapor extraction. The use of soil vapor extraction at the Hardage Site, however, does have several shortcomings and potential pitfalls, including the following:

(a) Even when viewed in its best light, soil vapor extraction would remove less than 165,000 gallons of residual liquids from the Hardage Stie,

representing less than 10% of the 1.8 million gallons at the site. IV at 853; GE 54(a)-(b); GE 56.

(b) Even if the Court adopted the government's remedy, some of the most mobile and most carcinogenic of the compounds found at the Hardage Site would be likely to volatilize (change from the liquid phase to the air phase) during excavation, thus undercutting the effectiveness of soil vapor extraction and posing a danger as well. IV at 861-62.

(c) Even after excavation, pumping, and soil vapor extraction, there will be approximately 500,000 gallons of waste left at the Hardage Site under the EPA remedy. IV at 860.

(d) The same results that could be achieved through soil vapor extraction will be obtained through natural diffusion processes. Soil vapor extraction, however, holds out the possibility of achieving these results in five years, as opposed to the thousands of years necessary for the natural process to take place. Unfortunately, no similar soil vapor extraction process has been in operation long enough to confirm such predictions for the Hardage Site.

(e) Sufficient data does not exist at this time to accurately predict the success of soil vapor extraction at the Hardage Site. IV at 902. Gary R. Walter, an impressive government expert, testified that he knew of no site like the Hardage Site where soil vapor extraction has been successfully implemented. IV at 902. The model for the government's remedy has not been validated at a similar site. IV at 903.

(f) Soil vapor extraction will not remove a significant number of semi-volatile compounds. IV at 906.

(g) Significantly, the soil vapor extraction proposed by the government would take place only after the government conducted tests to see if it was

feasible. Thus, the soil vapor extraction component of the government's proposed remedy is actually a pilot research program that may ultimately be rejected even if pursued initially. The total cost of the soil vapor extraction system that would be borne by the soil vapor extraction group under the Consent Decree is $12,168,000. None of the soil vapor extraction witnesses for the government could affirmatively recommend soil vapor extraction as an appropriate remedial action at the Hardage Site. V at 1138; GE 395; II at 305-50, 382-86; IV at 865, 900-08.

(h) Site conditions often determine the effectiveness of soil vapor extraction. Given the problems the Court has found with excavation of the Hardage Site, which one witness has credibly testified would exacerbate any soil vapor extraction effort, the Court is not inclined to order this promising technology for the Hardage Site. IX at 1730-49.

(i) The EPA-proposed remedy requires more operation and maintenance activity than the HSC remedy because of the soil vapor extraction component. DE 16 tables 7.2 & 7.3, at 3; R. Davis R. Aff. table 1, at p. 12 of 12.

6 In short, while the experts on both sides of the soil vapor extraction issue were persuasive, the soil vapor extraction issue cannot be viewed in isolation. The government experts have convinced the Court that solid vapor extraction is an attractive, effective, and promising remedial technology for certain hazardous waste sites. While the Court discounts much of the criticism leveled at this component of the government's proposed remedy, including that of HSC expert Dr. Hoag, the Court is not convinced, in light of the failure of proof on the government's excavation component, as well as the other issue outlined above, that soil vapor extraction is appropriate for the Hardage Site.

7. Similarly, under the range of plausible site conditions, based on industry experience at other hazardous

waste sites, the Court is not convinced by a preponderance of the evidence that soil vapor extraction technology is a feasible and effective technology for the removal of volatile organic compounds from the source areas at the Hardage Site.

VIII. REMEDIAL ACTION TO BE TAKEN IN THIS CASE—ADOPTION OF THE PRIMARY FEATURES OF THE HSC REMEDY

1. From a remedy selection standpoint, the Court finds in favor of the HSC's containment remedy as opposed to the government's excavation/soil vapor extraction remedy. The Court specifically finds that the defense has proved the appropriateness, safety, and feasibility of this remedy by a preponderance of the evidence.[30] Aside from the conceptional and technical flaws associated with the government's proposed remedy, which are discussed above, the additional reasoning for this remedy preference is set forth below. The Court will, however, order certain modifications to the HSC's proposed remedy. As set forth below, the remedy ordered by the Court generally adopts the HSC's proposal concerning recovery wells in the barrel mound, a V-shaped interceptor trench, a southwest line of interceptor wells, surface water monitoring, a water treatment system for groundwater, and institutional controls. The Court, however, also will order liquid recovery wells to be placed in the main pit in light of (1) the clear evidence presented at trial of barrel deposits in the main pit area, and (2) the failure of the HSC remedy to provide for such wells. A cap that was proposed by the HSC will be utilized at the site.

2. In general, the remedy for the Hardage Site proposed by the HSC consists of a composite cap over the

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[30] In reaching this ruling, the Court realizes there are several remedial elements common to both the government's proposed remedy and the defendants' proposed remedy.

source areas, liquid recovery wells in the barrel mound (and possibly part of main pit), a V-shaped interceptor trench, interceptor wells in the southwest corner of the site, a water treatment system for groundwater collected from the trench and wells, institutional controls, natural attenuation of the alluvial groundwater, and groundwater and surface water monitoring. DE 16 at 1-4. The Court adopts this remedy with the addition of liquid recovery wells being mandated for the main pit, and any other changes noted below. Except as modified in this Order, the remedy ordered in this case shall be in accordance with the HSC remedy design documentation.

3. The HSC remedy was designed to address in a comprehensive way management of the wastes present at the Hardage Site. DE 16 at 1-1.

4. Few if any hazardous waste sites have been studied as thoroughly and as comprehensively by both the government and defendants as the Hardage Site. V at 987-88; Schmittle Decl. at D-2 to -8, D-20 to -29; Cherry Decl. at D-8.

5. EPA Director of Hazardous Waste for Region VI Allyn Davis believes there are liquids that can be pumped at all three source areas at the Hardage Site. V at 1163-64. In the Court's view, this testimony corroborates the effectiveness of the HSC's proposed pumping, as well as the Court's decision to order pumping from the main pit area.

6. Mr. Davis outlined the four means through which the agency planned to achieve its goal of protecting public health at the site: to restrict public exposure to contaminants through surface water, groundwater, the atmosphere, and direct contact. V at 1186. The HSC remedy meets these goals. IX at 1797-98.

7. Four routes for constituent migration from the Hardage Site can be idenitfied: (1) surface or overland flow during site operations; (2) surface or overland flow

currently exiting the southwest corner of the site; (3) groundwater flow through fractures in Strata I, II, and III; and (4) groundwater flow through pore spaces of the rock in Strata I, II, and III. DE 111; VII at 1420.

8. The primary route by which constituents have migrated from the source areas to the alluvium of NCC is overland flow or surface runoff. Schmittle Decl. at D-18 to -20; DE 30 tabs B & C; DE 36.

9. Humans potentially may be exposed to hazardous substances released at or from the Hardage Site through four potential pathways for exposure: groundwater migration, surface water migration, air emissions, and direct contact. DE 15 at 4-1a; Bost Decl. at D-3 to -4, D-9; DE 111; DE 177; III at 672; V at 1186; IX at 1797.

10. Despite the migration that has occurred, the Oklahoma water quality standards for the waters of NCC have never been exceeded. II at 202, 226; V at 1010, 1179; VIII at 1602.

11. Neither the HSC nor the EPA proposed a remedy that would remove all contaminants from the Hardage Site. Moreover, neither proposed remedy would make the site suitable for use by animals or humans in the foreseeable future. DE 179; II at 201; IV at 805; V at 1174-75.

12. A remedy for the Hardage Site that controls the surface water pathway, precludes site access and direct contact with waste, controls air emissions from the source areas, precludes the use of affected groundwater, and provides for a contingent response to ensure continued maintenance of the quality of NCC goes a long way toward the protection of public health and welfare and the environment. Bost Decl. at D-3 to -7, D-10 to -11; DE 112; III at 672-76.

13. A remedy consisting of the following components would arguably would be effective to address the remedial objectives identified in Finding No. 12: a cap,

surface water monitoring, groundwater monitoring, institutional controls, and contingency plans. Bost Decl. at D-6 to -11; Cherry Decl. at D-23 to -25; XI at 2107.

14. The HSC remedy with the modifications ordered by the Court: achieves the remedial objectives identified in Finding No. 12 necessary to protect the public health and welfare and the environment; affords a further measure of protection to the NCC alluvium and NCC by cutting off migration of constituents from the site; accomplishes a further reduction in the already low potential risks to the public health and welfare and the environment posed by the Hardage Site; and captures and removes contaminated groundwater and non-aqueous phase liquids for treatment. Hecox Decl. at D-2 to -3; DE 26; Cherry Decl. at D-25 to -26; Bost Decl. at D-11; DE 112; XI at 2108.

15. The HSC remedy as modified eliminates all four potential pathways for exposure to substances at the Hardage Site. IV at 1797; V at 1186-87.

16. The HSC remedy, consisting of the following primary components, other components described in the HSC Preliminary Design Report (DE 16), and certain modifications as indicated below, is protective of the public health and welfare and the environment and should be implemented at the Hardage Site:

(a) V-shaped, gravel-filled interceptor trench constructed at the top of Stratum IV to provide hydraulic control of the source areas by capture and removal of affected groundwater and non-aqueous phase liquids for subsequent treatment. Hecox Decl. at D-4 to -5; DE 60 & 88; II at 221; VIII at 1589; IX at 1788.

(b) Composite cap over source areas to prevent direct contact with wastes, to control surface water flow in source areas, to limit erosion of affected soils, to reduce infiltration of precipitation, and to provide passive gas collection and treatment. Hecox Decl. at D-4; DE 93 & 94; VIII at 1697-99.

(c) Permanent vertical liquid recovery wells in the barrel mound and the main pit to extract pumpable liquids for off-site treatment by incineration and disposal in order to protect the stability of the barrel mound and main pit and to reduce the volume of free liquids. Hecox Decl. at D-4; DE 92; Finding No. 26 *infra*; IX at 1789-1818. In the event off-site disposal of pumpable liquids is unavailable, the *Hardage* defendants shall submit an alternative plan to the United States and to the Court for incineration and disposal of such wastes.

(d) Southwest interceptor wells to prevent migration of affected groundwater into the NCC alluvium (in conjunction with the V-shaped interceptor trench). Hecox Decl. at D-4; DE 60 & 88; II at 223.

(e) Water treatment system to treat groundwater collected from the trench and wells to standards applicable for discharge into NCC. Hecox Decl. at D-4; DE 95; IX at 1796. The water treatment system will be operated in such a way as to avoid commingling of liquids from different remedy components without EPA approval. This limitation on commingling does not preclude the commingling of liquids from the V-shaped interceptor trench, vertical liquid recovery wells in the barrel mound and main pit, and the underdrains beneath the cap as shown on Figure No. 18 of the HSC Preliminary Design Report (DE 16) with each other.

(f) Natural attenuation and, if necessary, control of migration of constituents presently found in the alluvial groundwater to effect cleanup of the alluvial groundwater and to prevent significant expansion of the area of affected groundwater. Hecox Decl. at D-4; VIII at 1595.

(g) Institutional controls to limit public access to affected areas, to prohibit future withdrawal of affected groundwater, and to continue the public water supply to area residents. Hecox Decl. at D2, D-4; DE 97.

(h) A groundwater and surface water monitoring system to monitor groundwater and surface water for con-

tinued effectiveness of the remedy. Hecox Decl at D-4; DE 97.

17. Strata IV, V, and VI, which will constitute the "bottom" of either the HSC or the EPA remedy, are characterized by the following four natural features:

(a) Low permeability (Strata IV and V);

(b) No material hydraulically conductive fractures;

(c) Saline water; and

(d) Sluggish flow in Strata VI, which will preclude migration of constituents to any usable water supply for millions of years. XI at 2103, 2129.

18. Constituents, including any DNAPL, which have left or will leave the source areas, generally will migrate laterally through Stratum I, II, and III toward the HSC's proposed V-shaped interceptor trench and southwest interceptor wells. Here they will be captured, removed, and treated. Larson Decl. at D-8 to -10; DE 58, 60 & 88; II at 221-23; V at 1026; V at 1182; V at 1069; VIII at 1590-94.

19. The area of affected groundwater at the Hardage Site extends to the east from the source areas toward the east farm ponds and to the west and southwest into the NCC alluvium. Schmittle Decl. at D-16-17; DE 33, 34 & 35.

20. Groundwater flow currently discharging into the east farm ponds will be reversed by the V-shape trench and will instead discharge into the trench. Larson Decl. at D-9 to -10; Hecox Decl. at D-6; DE 60; II at 220.

21. Given the nature of the subsurface geology in the southwest corner of the site, the use of interceptor wells there instead of a trench will present less construction uncertainty and less risk to workers during installation. Hecox Decl. at D-7; VII at 1706-07.

22. The southwest interceptor well system can be constructed and operated to prevent migration of affected upgradient groundwater into the alluvium of NCC and will be as effective in providing hydraulic control of groundwater flow as would a trench. Hecox Decl. at D-6 to -7; Larson Decl. at D-6 to -10; II at 223-24; VIII at 1706-08; V at 1024.

23. By utilizing a southwest well system instead of the trench proposed by the government, the wells will have overlapping spheres of influence, and will be easier to extend than a trench. VIII at 1706-07. The government concedes that there is no significant difference between the trench system and the well system, or significant advantage of one over the other.

24. Aqueous and non-acqueous phase liquids are present at the base of the barrel mound and have been successfully pumped. This indicates that their removal by pumping is feasible during remediation. Schmittle Decl. at D-23.

25. Defense Exhibit No. 26 shows the proposed HSC remedy with vertical liquid extraction wells, trenches, etc. Defense Exhibit No. 108 shows the barrel mound with vertical extraction wells under the HSC remedy. With the exception of the modifications discussed in this order, these exhibits provide an accurate overview of the remedy ordered for the Hardage Site.

26. An HSC witness, Mr. Hecox, testified that there are no vertical extraction wells in the main pit under the HSC proposal "because that is an area where Mr. Hardage apparently did not dispose of any drums." IX at 1789. In response to the Court's questioning, Mr. Hecox modified this testimony, stating instead that there were no "significant quantities" of drums in the main pit area. *Id.* The magnetometer tests, however, show that there are barrels there. GE 2 fig. 3-8; DE 30 tab D. Considering also the cross-examination on this issue by government counsel, the Court finds that Mr. Hecox was im-

peached on this point. IX at 1801-18. There is in fact a considerable concentration of drums on the west side of the main pit.

27. The vertical liquid extraction wells can be constructed and operated effectively to remove existing pumpable liquids in the barrel mound and the main pit, and to remove any liquids that later drain into these source areas. Hecox Decl. at D-7; IX at 1792, 1821-22.

28. Vertical liquid extraction wells at the spacing proposed by the HSC "can effectively remove pumpable waste liquids and contaminated water" from the barrel mound and main pit. Robertson Aff at 10-11; IX at 1791-92.

29. Vertical liquid extraction wells, given the conditions at the Hardage Site, are a substantially safer method for removing liquids from the barrel mound and the main pit than excavation. IX at 1791. If drums corrode or collapse, the liquid will be picked up by the vertical extraction wells. IX at 1792. There is to be no termination of the vertical extraction wells absent a court order because of the possibility of continuing corrosion and collapse of drums.

30. The primary function of the cap is to prevent direct access of people and animals to potentially contaminated materials at the site. Differential settlement could occur after the cap is installed attributable to collapsing or disintegrating drums. There are, however, similar problems with the government's proposed cap as well. VIII at 1698-1726. Mr. Allen described the defendants' proposed landfill cap. It has vegetation on the top of it. It is intended to be a permanent cap. It includes a passive vapor control system. VIII at 1697.

31. The Court is unable to see any significant advantages in choosing either the government's proposed cap over the defendants' proposed cap, or vice versa. Consistent with the suggestion of the government's counsel in

closing arguments, the Court, having now selected the HSC remedy, will adopt the HSC's cap proposal rather than the government's. XII at 2344. However, as noted in Finding No. 63 below, certain modifications will be ordered to the cap.

32. A preload constructed over the barrel mound and over a portion of the main pit will minimize long-term total and differential settlements, thereby minimizing the long-term maintenance costs of the cap. Allen Decl. at D-5; VIII at 1697-98.

33. A multilayer cap system consisting of a vegetative cover, topsoil, a clean select fill and drain layer, a re-compacted fine-grain layer, and a gravel gas collection layer can be constructed at the Hardage Site and will limit infiltration, will control surface runoff, will control gas emissions from the source areas, will prevent physical exposure to waste material, will control seepage from the sides of the mounds, and will satisfy applicable regulatory requirements. Allen Decl. at D-6 to -7; Hecox Decl. at D-8 to -9; VIII at 1697-1700. The modifications set forth below as suggested by the OSDH shall also be incorporated.

34. The remedy proposed by the HSC provides for long-term monitoring and maintenance of the cap. VIII at 1727. If problems with the cap develop, they are to be promptly brought to the attention of the Court.

35. Toe drains installed at the base of the cap along the west, south, and north sides of the source areas will collect any lateral seepage. Hecox Decl. at D-9; VIII at 1697.

36. The groundwater treatment system proposed by the HSC will be effective in reducing the volume, toxicity, and mobility of any constituents present in the construction phase storm water runoff and in the groundwater recovered from the V-shaped interceptor trench and southwest interceptor wells. Hecox Decl. at D-9 to -10; II at 222; V at 1173.

37. Institutional controls, including the acquisition of interests in adjacent property, an alternative water supply, and site security are necessary at the Hardage Site under either the HSC remedy or the EPA remedy in order to eliminate unauthorized withdrawal and use of affected groundwater from the original Hardage Site and the NCC alluvium. Hecox Decl. at D-2, D-10 to -11; V at 1180.

38. The HSC's proposed monitoring program will produce the data necessary to assess the operation of the following remedial components: hydraulic control of the V-shaped interceptor trench and southwest interceptor wells, liquid levels in the vertical liquid extraction wells, flushing of the NCC alluvium, and movement of constituents in the alluvium. Hecox Decl. at D-11 to -12.

39. It is a common practice among scientists and engineers addressing hydrogeologic issues to base conclusions about subsurface conditions on information derived from boreholes that sample only a small portion of the whole site area. XI at 2103-04.

40. The subsurface geology of the Hardage Site to a depth of about 300 feet consists of six distinctive bedrock strata (Strata I-VI) with separate hydraulic properties. These major lithologic units are unbroken by faults or major offsets of any kind, are laterally continuous across the site and for several miles, and are flat lying (or nearly so). Schmittle Decl. at D-8 to -11, D-13 to -14; Mitchell Decl. at D-3 to -4; Keys Decl. at D-5 to -7; Papadopulos Decl. at D-4 to -5; DE 27, 28, 29, 30 tab A, 53, 54 & 57; VI at 1343-44.

41. Based on the geophysical logging at the site, it is possible to correlate stratigraphic units under the site and to identify a predominance of mudstone. DE 53, 54-57; VII at 1473-75.

42. Hydrogeologically, the site is characterized by a "fresh water zone in the shallow bedrock (Strata I, II, and III) that flows toward and discharges to the allu-

vium" of NCC, plus a "saline zone (Stratum VI) and underlies the fresh water zone and is hydraulically separated from it" by the low hydraulic conductivity mudstones and silty mudstones of Strata IV and V. Schmittle Decl. at D-13. *See* DE 27, 28 & 29.

43. The lower part of Stratum IV (below elevation 1,020 mean sea level (m.s.l.)) and Stratum V have extremely low permeabilities or hydraulic conductivities. Taking into account the results of packer tests, laboratory tests, pressure pulse tests, water level recovery tests, and regional modeling, the horizontal hydraulic conductivities of these strata are indicated to be on the order of 10^{-8} centimeters per second (cm/s) and the effective metrical hydraulic conductivities are in the range of 10^{-10} to 10^{-12} cm/s. Papadopulos Decl. at D-4 to -16.

44. The extremely low permeabilities result in the vertical flow of water downward through Strata IV and V being very slow, requiring approximately 40,000 years for water to travel one foot into the mudstone. Papadopulos Decl. at D-19; DE 67; VII at 1520.

45. The presence of saline water at a depth beneath the site indicates that the material above the saline water is of very low permeability, as it has not permitted a downward recharge of fresh water from the surface. VII at 1475.

46. The geochemical evidence from the chloride leach tests supports the hydraulic evidence that groundwater flow in Strata IV and V is extremely slow. Cherry Decl. at D-11 to -13; XI at 2099-2103.

47. In the light of chloride profiles for Stratum IV, lateral groundwater movement below the upper 20 feet of Stratum IV, as depicted in Government Exhibit No. 95, is highly unlikely. XI at 2100.

48. No credible evidence of interconnected, hydraulically conductive fractures in Stratum IV and V of the site has been found. Cherry Decl. at D-13 to -18; Keys

Decl. at D-8 to -9; II at 173-74; VII at 1476-78, 1499, 1504; VII at 1519, 1522; XI at 2100-02.

49. Any fractures that might be present within the lower portion of Stratum IV (below 1,020 feet m.s.l.) and V do not constitute significant pathways for constituent movement; any movement of contaminants that might occur would be to Stratum VI, which is characterized by saline water and extremely sluggish flow, and thus such movement, if it should occur, would not constitute a threat to the public health and welfare or the environment. Cherry Decl. at D-13 to -19; XI at 2101-03.

50. The Stratum IV mudstone is very stable geologically and will not shrink or crack when exposed to deionized water, saline water, waste-containing water from the Hardage Site, or DNAPLs. Mitchell Decl. at D-3 to -4, D-6 to -7; DE 30 tab F; VI at 1345, 1349-56.

51. Strata IV and V form an effective, regionally extensive, and continuous hydraulic barrier to vertical migration of constituents. Cherry Decl. at D-20; VII at 1522.

52. The water beneath Stratum III has no foreseeable value as a water resource for either human consumption or agricultural purposes. Cherry Decl. at D-10; VII at 1473; XI at 2098, 2103, 2130.

53. Stratum VI is a zone of lateral groundwater flow in which the flow rate is negligible, even when considered over thousands of years. Cherry Decl. at D-19; VII at 1521; VIII at 1647-48; XI at 2103, 2129-30.

54. The travel time of any contaminants through the lower portion of Stratum IV and through Stratum V to the saline water in Stratum VI, and eventually to the Washita River, would be on the order of millions of years. VII at 1421; VIII at 1647-48.

55. For the implementation of the HSC remedy, the maximum individual lifetime cancer risk is "considerably

less than that considered acceptable under the EPA's published guidelines." Harris Decl. at C-24. *See* Harris Decl. at C-33; III at 648-50.

56. The cancer risk associated with implementing the HSC remedy is substantially less than that of implementing the new EPA excavation and soil vapor extraction remedy. Harris Decl. at C-24; DE 139; III at 648-50.

57. Implementation of the HSC remedy "will not result in either significant short-term or long-term public health risks to off-site residents." Harris Decl. at C-24; *see id.* at C-33.

58. The estimated cost of the HSC remedy, including major capital replacement contingencies, operation, and maintenance, in 1989 dollars, is $53,952,000. DE 16 tables 7.1 & 7.2; DE 98(a), (b).

59. Section 106 of CERCLA, 42 U.S.C. § 9606, expressly provides the standard that a court must follow when awarding injunctive relief. Section 106 provides that a court has "jurisdiction to grant such relief as the public interest and the equities of the case may require" in order to abate what may be "an imminent and substantial endangerment to the public health or welfare or the environment because of an actual or threatened release of a hazardous substance from a facility. . . ." 42 U.S.C. § 9606(a) (1982).

60. The HSC's remedy as modified by the Court protects human health and the environment and complies with ARARs, provides long-term effectiveness and permanence, reduces the toxicity, mobility, and volume of the wastes, provides short-term effectiveness, is easily implemented, and is cost effective. Bost Decl. at D-15 to -17; Hecox Decl. at D-13 to -14; Coleman Decl. at B-4; IX at 1797-99.

61. The HSC has kept the OSDH informed about site investigations and the remedy selection process since the

HSC first became involved at the site. Coleman Decl. at B-4; III at 612.

62. The OSDH supports a remedy consisting of the components of the HSC remedy, but with a cap having a thicker clay layer than that currently proposed by the HSC, and with a system for removing vapors that gather in the gas collection layer under the cap. Coleman Decl. at B-4-5; IX at 1799.

63. The HSC remedy shall be modified to meet the OSDH's preferences about the thickness of the clay cap and about an active gas removal system under the cap. IX at 1799.

64. The HSC remedy is fully developed and can be readily implemented to address conditions at the Hardage Site. The HSC's proposed remedy as reflected in the HSC remedy design documentation contains sufficient detail and specificity so that it may be ordered in a mandatory injunction under section 106 of CERCLA subject to the modifications herein.

65. There are approximately 1.8 million gallons of liquid waste at the Hardage Site. IV at 853, 860. Under the HSC remedy a significant amount of liquid will remain in the source areas, particularly the barrel mound. This is also true, however, of the government's proposed remedy, which would leave at least 500,000 gallons in the source areas even after the proposed excavation and soil vapor extraction. IV at 860.

66. Insofar as the section 121 cleanup standards are applicable or may be considered by the Court, the HSC's proposed remedy best satisfies those standards.

> (a) The HSC's proposed remedy complies more fully with the provisions in CERCLA that require that remedies address the "persistence, toxicity, mobility, and propensity to bioaccumulate of . . . hazardous substances and their constituents." CERCLA § 121(b)(1)(C), 42 U.S.C. § 9621(b)(1)(C)

(Supp. V 1987). The HSC remedy will not release as much dust and vapor into water, soils, and vegetation surrounding the site, and therefore is less likely to introduce chemicals into the food chain that may bioaccumulate and cause cancer and other adverse health effects.

(b) The EPA's proposed remedy, in contrast to the HSC's remedy, presents a significant "short- and long-term potential for adverse health effects from human exposure." CERCLA § 121(b)(1)(D), 42 U.S.C. § 9621(b)(1)(D) (Supp. V 1987).

67. The HSC defendants have proven by a preponderance of the evidence, and also by the clear weight of the evidence, that the HSC remedy, as modified herein, best:

(a) satisfies the section 106(a) standards for health and welfare and the environment;

(b) satisfies, and is most consistent with, all applicable or relevant section 121 cleanup standards; and

(c) satisfies, and is most consistent with, all applicable or relevant NCP standards.

IX. CONSENT DECREE FOR IMPLEMENTATION OF PARTIAL REMEDIAL ACTION

A. *Introduction*

On the eve of trial, three days before the scheduled opening statements in the trial of the Remedy Phase, the United States on November 21, 1989, lodged with this Court a Consent Decree for the Implementation of Partial Remedial Action: Source Excavation and Soil Vapor Extraction ("Consent Decree"). By the provisions of the Consent Decree, eight defendants and six federal entities agreed to pay for and perform certain elements of the United States' desired remedy for the Hardage Site.

Based on the Consent Decree, and the fact other defendants allegedly agreed to implement the remainder of the United States' remedy proposal, the government argued that no Remedy Phase trial should be held. United States' Pretrial Brief at 2. However, the HSC defendants strongly opposed the proposed settlement and its approval in a brief submitted on November 22, 1989, and demanded that the Court reject the decree out of hand. HSC Brief in Opposition to Proposed Carve-Out Settlement at 3. Alternatively, the HSC requested that the Court defer consideration of the Consent Decree until after the Remedy Phase trial.[31] *Id.* at 34.

After hearing arguments on November 24, 1989, and considering the procedures for lodging and standards of review for consent decrees, the Court rearranged the trial schedule to take testimony concerning the Consent Decree. I at 62-66. Eight expert witnesses testified on behalf of the United States and the settling defendants concerning the hazardous wastes at the Hardage Site, technical aspects of the remedy elements of the Consent Decree, and their implementation. Four HSC experts disagreed with the appropriateness of excavation and soil vapor extraction for the Hardage Site. In addition, the HSC presented excerpts of the deposition of an EPA official.

At the close of the presentation, the Court found the record on the Consent Decree to be inadequate. III at 705. Questions concerning the wisdom of soil vapor extraction at the Hardage Site remained, together with concerns about the contribution provisions of the decree. *Id.* In addition, the Court desired to ensure that the

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[31] The HSC filed a second brief opposing approval of the Consent Decree on November 19, 1989. The Vapor Extraction Group (defined in Section F, paragraphs six and seven of this Section) supported approval of the Consent Decree on December 6, 1989. The United States replied to the HSC's Opposition Briefs on December 8, 1989.

remedy "imposed in connection with the Hardage Site is in the public interest." III at 706. Accordingly, the Court took the Consent Decree under advisement and directed the rest of the Remedy Phase trial to proceed. *Id.*

Earlier sections of this Order discuss the Court's findings of fact and conclusions of law concerning the flaws in the United States' proposed remedy and the remedial action to be implemented at the Hardage Site. *See supra* Section VII & VIII. The Court now considers the Consent Decree.

On January 25, 1990, the United States filed a motion to enter the Consent Decree as an order of this Court. The motion reflected that Mark S. Coleman of the OSDH had filed comments on December 20, 1989, expressing concerns about the risks created by excavation of the Hardage Site. The United States responded to each of Mr. Coleman's comments in its motion. The HSC defendants responded on February 8, 1990, in opposition to the entry of the Consent Decree. For the reasons set forth below, the United States' motion for entry of the Consent Decree is DENIED.

B. *Legal Discussion*

1. Statutory Authority

The CERCLA authorizes agreements concerning response and remedial actions. Under section 122, the President may enter agreements with potentially responsible persons to perform any response action if:

> the President determines that such action will be done properly by such persons. Whenever practicable and in the public interest, as determined by the President, the President shall act to facilitate agreements under this section that are in the public interest and consistent with the National Contingency

Plan in order to expedite effective remedial actions and minimize litigation.

42 U.S.C. § 9622(a) (Supp. V 1987). The CERCLA mandates the filing of such agreements in the appropriate United States District Court as consent decrees at least 30 days prior to entry of a final judgment. 42 U.S.C. §§ 9622(d)(1)(A), (d)(2)(A) (Supp. V 1987). The act requires a comment period for persons not named as parties to the action. 42 U.S.C. § 9622(d)(2)(B) (Supp. V 1987).

In this instance, the United States filed the Consent Decree on November 21, 1989. Therefore, the 30-day comment period expired on December 21, 1989.

2. Standard of Review

When this Court approved the $11 million Consent Decree for *De Minimis* Settlement and entered it as a judgment of this Court on September 22, 1989, the Court applied the articulated standard of review: whether the settlement is fair, reasonable, and consistent with the purposes of CERCLA. *See* Transcript of Sept. 22, 1989, Hearing at 59 (Oct. 2, 1989); *City of New York v. Exxon Corp.*, 697 F.Supp. 677, 692 (S.D.N.Y. 1988). In reaching this determination, a court considers "the strength of the plaintiff's case, the good faith efforts of the negotiators, the opinion of counsel, and the possible risks involved in litigation if the settlement is not approved." *Id.* (citing *United States v. Hooker Chems & Plastics Corp.*, 540 F.Supp. 1067, 1075 (W.D.N.Y. 1982)).[32] The Court makes these inquiries to "deter-

[32] Factors considered in measuring settlement fairness and reasonableness include: the strength of the plaintiff's case; the good faith efforts of the negotiators; the complexity, length, expense, and risk of litigation; the amount of opposition to the settlement; the opinions of competent counsel; and the stage of the proceeding. *See In re Acushnet River & New Bedford Harbor: Proceedings re Alleged PCB Pollution*, 712 F.Supp. 1019 (D.Mass.1989); *Exxon*,

mine whether the decree adequately protects the public interest." *Id.* (citing *United States v. Conservation Chem. Co.*, 628 F.Supp. 391, 400 (W.D.Mo. 1985)).

In enacting the 1986 amendments of CERCLA, Congress sought to "expedite effective remedial actions and minimize litigation." 42 U.S.C. § 9622(a) (Supp. V 1987). Settlements achieved through extensive arms-length negotiations, and approved by all counsel and the agency charged with implementation of environmental statutes enjoy a strong presumption of validity. *Hooker Chems. & Plastics*, 540 F.Supp. at 1080. During settlement proceedings, a court should ensure "that the settlement protects public health and the environment to the greatest extent feasible under currently existing technology." *Id.* at 1073.

Where a consent decree involves remedial action, a court assesses reasonableness by considering:

> 1) the nature and extent of the potential hazards at the site; 2) the availability and likelihood of alternatives to the Consent Decree which would result in cleanup of the surface of the site; 3) the adequacy of the technical proposal of the work which will be undertaken; 4) the extent to which the Consent Decree furthers the goals of the statutes which form the basis for this litigation; 5) the extent to which the Court's approval of the Consent Decree is in the public interest.
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> *United States v. Seymour Recycling Corp.*, 554 F. Supp. 1334, 1339 (S.D.Ind. 1982).

Finally, a court attempts to strike a balance between policies favoring settlement and the need to safeguard the public interest in environment cases. In *United States v. Carrols Development Corp.*, 454 F.Supp. 1215 (N.D.N.Y.1978), the court summarized the test:

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697 F.Supp. at 692; *Hooker Chems. & Plastics*, 540 F.Supp. at 1072.

> It is not the Court's function to determine whether this is the best possible settlement that could have been obtained, but rather the Court's duty is to determine "whether the settlement achieved is within the reaches of the public interest."

454 F.Supp. 1215, 1222 (N.D.N.Y.1978) (quoting *United States v. Gillette Co.*, 406 F.Supp. 713, 716 (D. Mass.1975)).

C. *Witnesses*

Eight primary witnesses appeared on behalf of the United States and the settling defendants in support of the approval of the Consent Decree. The witnesses and the topics of their testimony were: Dr. Kirk W. Brown, source area strength and volumes; Marc A. Jewett, hydrogeological consideration; Joseph P. Danko and Dr. Harold W. Bentley, soil vapor extraction feasibility; Dr. Annette M. Shipp, risk assessment of excavation and soil vapor extraction; and Murdock John Cullinane, Jr., comparative costs of the competing remedy proposals. Two USPCI employees, Mary Ann Heaney and Steven A. Beck, testified concerning the safety of excavation. Portions of other witnesses' testimony were also offered by the parties on the Consent Decree issue.

Four primary HSC witnesses testified in opposition to the Consent Decree and the technical aspects of the remedy elements. These witnesses and the topics of their testimony were: Mark S. Coleman, the Oklahoma State Department of Health's evaluation of the competing remedy proposals; Dr. Robert H. Harris, comparative risk assessment; Richard C. Bost, endangerment assessment following implementation of the competing remedies and cost comparison; and Gary R. Hecox, containment hydrogeology, ground water mediation methods, and the United States' proposed excavation system. At the suggestion of the Court and by agreement of the parties, the HSC presented, by designated deposition, the testimony of

Dr. Allyn M. Davis, hazardous waste management director, Region VII, concerning the United States' remedy, and tasks left to HSC by the Consent Decree.

D. *Exhibits*

The Court received the following United States exhibits in support of the Consent Decree: United States' Consent Decree Exhibit Numbers 2, 19, 71, 73, 75, 81, 84, 87, 159, 160, 176, 186, 187, 326, 356, 369, 395, and 397. The Court also received the following HSC exhibits: 6-17, 21, 30D, 32, 47, 84-99, 106, 109-134, 137-145, 165, 167, 168A, and 169.

E. *Contentions of the Parties*

The United States urges the Court to approve the Consent Decree. The government advocates that the decree is lawful and fully consistent with Congress' intent to expedite effective remedial actions through settlement, and therefore is in the public interest. The United States argues the contribution provisions of the Consent Decree are appropriate and that the agreement encompassing resolution of liability of the federal agency waste generators is permitted. The United States contends that the Consent Decree meets the three-prongd test of *City of New York v. Exxon Corp.*, 697 F.Supp. 677 (S.D.N.Y. 1988).

Because the Consent Decree contemplates performance of remedial actions, the HSC requests a higher level of scrutiny by the Court than is called for under the *Exxon* test. However, applying even the less-stringent *Exxon* test, the HSC contends that the Court must reject the decree as neither fair and reasonable nor consistent with CERCLA. The HSC argues that the United States' self-settlement gives favorable treatment to the federal agencies. The HSC further contends that the settlement would unfairly shift excessive risks and costs to HSC. The HSC urges rejection because the settlement would contain un-

lawful terms (contribution provisions that would attempt to extinguish the HSC's claim for already-incurred response costs), and because the record is inadequate for approval.

F. *Additional Findings of Fact—Consent Decree*

1. This Court scheduled opening statements for the Remedy Phase trial for November 24, 1989, and the commencement of evidentiary presentations for November 27, 1989. Scheduling Order at 10.

2. On November 21, 1989, the United States lodged with this Court the Consent Decree.

3. The United States, including the EPA and certain federal entities, and the settling defendants entered into the Consent Decree. Consent Decree sec. II, at 4-5.

4. By the provisions of the Consent Decree, eight defendants and six federal entities agreed to perform certain elements of the United States' desired remedy for the Hardage Site. Consent Decree sec. VI.1, at 10.

5. The corporate Settling Defendants included: Cato Oil and Grease Co., Downtown Airpark, Inc., Kerr-McGee Corp. and Kerr-McGee Refining Corp., L & S Bearing Co., Rotex Corp., United States Pollution Control, Inc., the Glidden Co., and the Sherwin Williams Co. Consent Decree sec. II.3., at 5-7.

6. A subset of these settling defendants, known as the Vapor Extraction Group, agreed to design and implement at its own expense a drum excavation plan, the removal of free liquids and drums containing liquids from the main pit, and the installation of a soil vapor extraction system in the source areas. Consent Decree sec. IV.16, at 8; Consent Decree sec. VII, at 12-14.

7. The following corporations constituted the Vapor Extraction Group: Cato Oil & Grease Co.; Downtown Airpark, Inc.; Kerr-McGee Corp.; Kerr-McGee Refining

Corp.; L. & S Bearing Co.; Rotex Corp.; and USPCI. Consent Decree sec. VI.14, at 8.

8. Six federal entities consented to the Consent Decree: (1) United States Air Force; (2) United States Army; (3) United States Department of Energy; (4) United States Department of Justice; (5) United States Department of Transportation; and (6) United States Veterans Administration. Consent Decree sec. II.2, at 4-5.

9. These federal entities agreed to fund the following work under the Consent Decree: (a) operation of the soil vapor extraction system to be installed by the Vapor Extraction Group, until appropriate cleanup criteria were attained; (b) repair and maintenance, including regular inspection, of the soil vapor extraction and associated air treatment system; and (c) transfer of condensed vapors collected in the soil vapor extraction system to a central staging area at the Hardage Site. Consent Decree sec. VII.2, at 14-15.

10. Two settling defendants, Glidden and Sherwin Williams, agreed to pay to the Hazardous Substance Superfund the following amounts in response costs associated with the Hardage Site: Glidden—$341,484.00; Sherwin-Williams—$481,140.00. Consent Decree sec. XVIII.1 at 36.

11. The Consent Decree provided for only a partial remedial action. Consent Decree at 1. The remedial work under the Consent Decree would cover 35% of the comprehensive remedy solution for the Hardage Site. I at 27. Additional remedial components are needed to implement a comprehensive remedy at the Hardage Site. Consent Decree sec. V, at 9.

12. The Consent Decree contemplated that the work of the Vapor Extraction Group would include "transfer of liquids and drums containing liquids from the excavation areas to a central staging area on the Site, to be constructed and maintained by other parties, for disposal

by those other parties." Consent Decree sec. VII1.4d, at 13. The other parties to whom the liquids would be delivered included the HSC and other nonsettling defendants. I at 27; II at 268-69, 271-72; III at 507-08, 512, 676.

13. In addition, the federal entities agreed to fund work including "the transfer of condensed vapors collected in the soil vapor extraction system to a central staging area on the site, to be conducted and maintained by other parties, for disposal by those other parties." Consent Decree sec. VII.2, at 15.

14. The United States provided no explanation of the extent of liquids, drums, and condensed vapors, of which the HSC and the other nonsettling defendants would be required to dispose. DE 169 at 89-92.

15. The Consent Decree work plan provided no solution regarding what the HSC was to do with nonpourable liquids. III at 677.

16. The HSC projected the added cost to the HSC for handling these transferred vapors, liquids, and drums to be $120 million. III at 679, 682. *See* III at 494-99, 509-10.

17. The HSC defendants strongly opposed the approval of the Consent Decree. Brief of Hardage Steering Committee Defendants in Opposition to Proposed Carve-Out Settlement (filed Nov. 22, 1989) (filing No. 2232); Brief of Hardage Steering Committee Defendants in Opposition to Approval of Consent Decree for Partial Settlement (filed Nov. 29, 1989) (filing No. 2268).

18. The HSC defendants strongly opposed the need for source excavation and soil vapor extraction at the Hardage Site. *See supra* Section VIII.

19. The HSC proposed a comprehensive alternative containment remedy for the Hardage Site. I at 51; DE 16. The State of Oklahoma prefers the remedy proposed by the HSC. DE 169 at 26.

20. The State of Oklahoma supported some form of vapor extraction for the Hardage Site. III at 591, 615, 616.

21. However, the OSDH expressed concerns about the safety of excavation at the Hardage Site. Coleman Aff. at B-4; III at 588. These public health concerns included: the likelihood of barrel deterioration, exposure of chemicals to air during excavation, and the proposed excavation process itself. III at 588-89, 632; DE 169 at 24. In addition, the Department of Health anticipated the incompatibility of the wastes excavated and the possibility of fires during excavation. III at 590.

22. Based upon these concerns, the OSDH opposed approval of the portion of the Consent Decree concerning excavation of the barrel mound and main pit. III at 588; DE 169 at 18.

23. The United States' excavation expert, Mr. Bruck, acknowledged that detailed work plans for protection of workers during excavation have not yet been developed. V at 1114-18.

24. Implementation of excavation at the Hardage Site will result in significant risks to local residents as well as to workers who excavate the site. III at 640, 642, 648-49.

25. The Court is not convinced that excavation of the barrel mound and certain portions of the main pit to remove buried drums and free-phase liquids can be implemented safely by minimizing or eliminating the risks of injury to workers.

26. The United States wholly failed to present sufficient evidence to convince the Court that excavation was an appropriate remedy for the Hardage Site. *See supra* Section VII.

27. The lodging of the Consent Decree just three days before the scheduled commencement of the Remedy Phase trial in no way reduced the complexity, length, or expense of this litigation.

28. The Consent Decree defined "Covered Matters" as:

> any and all civil liability for reimbursement of response costs or for injunctive relief pursuant to sections 106 and 107 of CERCLA or section 7003 of RCRA with regard to the Site, including, without limitation, all claims asserted by the United States in the Complaint filed in this action and all claims, including claims for reimbursement of costs, asserted by any other party with respect to actions a) taken after the filing of the Complaint in this action, and b) responding to or addressing matters raised in the Complaint.

Consent Decree sec. XXVI.2, at 46.

29. This provision of the Consent Decree cuts off response costs incurred by private parties following the date of the filing of the Complaint, June 26, 1986. Consent Decree sec. XXVI.2.; I at 40-41.

30. The CERCLA provides the United States with no authority to settle private party response cost claims. 42 U.S.C. § 9607(a)(4)(B) (Supp. V 1987). The Court articulated this opinion during the September 22, 1989, hearing on the Consent Decree for *De Minimis* Settlement. Transcript of Hearing on Motion for Entry of Consent Decree for *De Minimis* Settlement at 70-71 (Sept. 22, 1988).

G. *Conclusions of Law—Consent Decree*

1. The technical proposal provided by the United States for excavation of the Hardage Site in support of the excavation portion of the Consent Decree is inadequate to protect the public interest. *Seymour Recycling*, 554 F.Supp. at 1339.

2. The United States failed to prove that excavation under the Consent Decree protects public health and the

environment. *Hooker Chems. & Plastics,* 540 F.Supp. at 1073.

3. Should the case law be interpreted to impose on the HSC defendants the burden of demonstrating that entry of the Consent Decree is improper, the HSC defendants have met that burden. *United States v. Akzo Coatings of America, Inc.,* 719 F.Supp. 571 (E.D.Mich.1989).

4. The Consent Decree is not reasonable when viewed under the factors in *Seymour Recycling.*

5. The CERCLA provides the United States with no authority to settle private party response costs. 42 U.S.C. § 9607(a)(4)(B) (Supp. V 1987).

6. Approval of the Consent Decree is not in the public interest. *Exxon,* 697 F.Supp. at 692.

7. The Court finds the Consent Decree should not be approved and the United States' Motion for Entry of the Consent Decree should be DENIED.

X. GOVERNMENT RESPONSE COSTS

A. *Introduction*

On September 11, 1989, the United States filed a motion seeking partial summary judgment against the defendants. The motion sought a determination of the defendants' liability under section 107(a)(4)(A) of CERCLA, 42 U.S.C. § 9607(a)(4)(A) (Supp. V 1987), for response costs incurred by the United States in conjunction with the Hardage Site. The United States requested $6,292,065.25 in response costs. In addition, the United States requested a declaration of liability for future response costs. In order to allow for final trial preparation, the Court notified the parties on November 15, 1989, of its preliminary ruling on the United States' motion for partial summary judgment on response costs. On December 8, 1989, this Court granted the United States' motion for partial summary judgment as to

$5,441,201.25 in response costs, but denied on summary judgment the request for DOJ indirect costs in the amount of $850,864. Order Granting Plaintiff's Motion for Partial Summary Judgment on Response Cost Issues (Dec. 8, 1989) (filing No. 2286). In addition, the Court granted the United States' motion for declaratory judgment for liability for future response costs, except DOJ indirect costs. *Id.* at 32.

At the trial of this matter the United States requested: additional DOJ direct labor costs for fiscal 1989 of $93,934; other DOJ direct costs for fiscal 1989 of $831,750; DOJ indirect costs of $1,042,489; EPA indirect costs of $473,756.50; and prejudgment interest in the amount of $737,723.41.[33]

B. *Stipulations*

On November 21, 1989, the parties provided the Court with a written stipulation in this matter. The Court adopts as part of its findings and conclusion the following portions of the stipulation relating to the United States' response costs. The United States' response cost portion of the stipulation reads:

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[33] Because certain United States' trial cost exhibits overlapped with costs awarded by the Court in its Order Granting United States' Motion for Partial Summary Judgment on Response Cost Issues, on May 31, 1990, the Court directed the United States to file a supplemental report summarizing the specific costs requested at trial. Order Directing Supplemental Filing (May 31, 1990) (filing No. 2895). As directed, the United States filed its respose cost supplement on June 11, 1989. United States' Supplemental Report on Claim for Response Costs (June 11, 1990) (filing No. 2932). With this Court's permission, the United States filed revised prejudgment interest calculations on July 3, 1990. United States' Supplemental Report on Revised Prejudgment Interest Calculation on Response Costs (July 3, 1990) (filing No. 3150), and on July 25, 1990. United States' Second Supplemental Report on Revised Prejudgment Interest Calculation on Response Costs (July 25, 1990) (filing No. 3325).

114. The Government's DOJ and EPA cost summaries submitted in support of the motion for partial summary judgment on response cost issue identify invoices which are described on their faces as invoices for Hardage site work. The Government has paid these invoices. The summaries also identify additional invoices which are not described on their faces as specific to the Hardage site. The Government also has paid these invoices.

115. The Government has paid various of its employees the amounts shown on the summaries submitted in support of the motion for partial summary judgment on response cost issue for hours which employees charged on their time sheets to the Hardage case.

116. The Defendants do not dispute that the Government has paid various of its employees the amounts shown on the EPA cost summary attached to the declaration of Nellie Boone and the DOJ cost summary attached to the declaration of Patrick A. McGeehin submitted in support of the motion for partial summary judgment on response costs issues.

117. The indirect cost rates computed by EPA for EPA Region VI were $66 per hour in fiscal year 1983, $60 per hour in fiscal year 1984, $54 per hour in fiscal year 1985, $53 per hour in fiscal year 1986, $52 per hour in fiscal year 1987. The provisional rates for fiscal years 1988 and 1989 are: $52 per hour in fiscal year 1988, and 52 per hour in fiscal year 1989.

118. The number of site-specific hours billed to the Hardage site by EPA Region VI personnel in program divisions in the years 1983 through December 31, 1989 were: 1983, 587; 1984,

409; 1985, 1,105.5; 1986, 1,727.5; 1987, 1,817; 1988, 2468; 1989, 700.

Supplemental Joint Statement of Uncontested Facts at 36-37.

C. *Witnesses*

Six witnesses appeared on behalf of the United States, by affidavit and through testimony, concerning the United States' response cost issues. The witnesses and their topics included: William Cooke and Joseph Menchaca, EPA indirect costs; Patrick A. McGeehin, DOJ direct and indirect costs and prejudgment interest; Thaddeus L. Juszczak, Jr., EPA Office of Solid Waste and Emergency Response ("OSWER"); Benjamin Burrell, DOJ rent charges; and Manfred van der Walde, the General Services Administration ("GSA") Rent System through which federal agencies are charged for space costs and related services. Thomas A. Matunas appeared on behalf of the HSC defendants.

D. *Exhibits*

The following exhibits were received into evidence at the trial relating to the United States' response cost issues: Government Exhibit Numbers 239-44, 246-49, 251-52, 253-57; HSC Exhibit Numbers 115, 146-53.

E. *Contentions of the Parties*

The United States contends that it is entitled to recover its response costs expended in conjunction with the Hardage Site and this case under section 107(a)(4)(A) of CERCLA, over and above the costs awarded by the Court in its December 8, 1989, Order Granting Plaintiff's Motion for Partial Summary Judgment on Response Cost Issues, except DOJ Indirect Costs. The costs the United States seeks include DOJ direct costs for payroll and other direct costs of litigation support, court reporter fees, and expert witness fees. In addition, the

United States argues that it is entitled to recover both EPA and DOJ indirect costs for activities necessary to support response efforts at the Hardage Site, under methodologies that are fair and reasonable. Finally, the United States requests an award of prejudgment interest.

The HSC responds that the United States is not entitled to recover its indirect costs because of flaws in the United States' cost accounting system and methodology. The HSC's arguments include: (1) indirect costs are not response costs as defined by CERCLA; (2) the United States failed to satisfy the requirements of section 104 (c)(1) of CERCLA in order to spend more than $2 million from the Superfund; (3) the United States' proposed remedies were inconsistent with the National Contingency Plan ("NCP"), therefore costs associated therewith are ineligible for reimbursement; and (4) the allocated indirect costs are inconsistent with the NCP and are not in accordance with generally accepted accounting principles. The HSC contends the inconsistent costs include: on-going costs of government, rent charges, indirect costs incurred when no field work was performed, lack of full capacity, and costs limited by interagency agreements. In addition, the HSC argues that the United States' expenditures are unreasonable, unjustified, excessive, unnecessary, and thus not recoverable under CERCLA, and also that they are unconstitutional. Finally, the HSC contends the United States is improperly seeking an award of prejudgment interest.

F. *Legal Discussion—United States' Response Costs*

1. Authority for Awarding Response Costs

Section 107(a) of CERCLA imposes liability on four categories of persons—including owners and operators of vessels or facilities, owners and operators of disposal sites, generators, and transporters—for costs including:

> all costs of removal or remedial action incurred by the United States Government or a State or an In-

> dian tribe not inconsistent with the national contingency plan. . . .

CERCLA § 107(a)(4)(A); 42 U.S.C. § 9607(a)(4)(A) (Supp. V 1987). This section authorizes "the government to recover *all* costs of its removal or remedial [response] actions." *United States v. R.W. Meyer, Inc.*, 889 F.2d 1497, 1504 (6th Cir. 1989) (emphasis in original) (footnote omitted).

Crucial terms within this cost provision have been broadly defined elsewhere in CERCLA. The terms "remove" or "removal" are defined as follows:

> The terms "remove" or "removal" means [sic] the cleanup or removal of released hazardous substances from the environment, such actions as may be necessary [sic] taken in the event of the threat of release of hazardous substances into the environment, such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances, the disposal of removed material, or the taking of such other actions as may be necessary to prevent, minimize, or mitigate damages to the public health or welfare or to the environment, which may otherwise result from a release or threat of release. The term includes, in addition, without being limited to . . . action taken under section 9604(b) of this title. . . .

42 US.C. § 9601(23) (Supp. V 1987) (footnote omitted). The section 9604(b)-authorized action, referenced in the above-listed definition of "remove," includes:

> such planning, legal, fiscal, economic, engineering, architectural, and other studies or investigations as [the President] may deem necessary or appropriate to plan and direct response actions, to recover the costs thereof, and to enforce the provisions of this chapter.

42 U.S.C. § 9604(b)(1) (Supp. V 1987).

The CERCLA goes on to define "remedy" or "remedial action", in pertinent part, as follows:

> The terms "remedy" or "remedial action" means [sic] those actions consistent with permanent remedy taken instead of or in addition to removal actions in the event of a release or threatened release of a hazardous substance into the environment. . . . The term includes, but is not limited to, such actions at the location of the release . . . any monitoring reasonably required to assure that such actions protect the public health and welfare and the environment.

42 U.S.C. § 9601(24) (Supp. V 1987) (footnote omitted).

Finally, as currently defined by CERCLA, "respond" or "response" means "remove, removal, remedy, and remedial action, all such terms (including the terms 'removal' and 'remedial action') include enforcement activities related thereto." 42 U.S.C. § 9601(25).

In *United States v. Northeastern Pharmaceutical & Chem. Co.*, 579 F.Supp. 823 (W.D.Mo.1984), *aff'd in part and rev'd in part on other grounds*, 810 F.2d 726 (8th Cir.1986), *cert. denied*, 484 U.S. 848, 108 S.Ct. 146, 98 L.Ed.2d 102 (1987), the district court interpreted the government's response costs to include:

> (a) Investigations, monitoring and testing to identify the extent of danger to the public health or welfare or the environment.
>
> (b) Investigations, monitoring and testing to identify the extent of the release or threatened release of hazardous substances.
>
> (c) Planning and implementation of a response action.

> (d) Recovery of the costs associated with the above actions, and to enforce the provisions of CERCLA, including the costs incurred for the staffs of the EPA and the Department of Justice.

Id. at 850.

Federal courts have held that the United States is entitled to recover its investigative costs from parties liable under section 107(a). *See New York v. General Elec. Co.*, 592 F.Supp. 291, 298 (N.D.N.Y. 1984) ("initial response costs . . . are clearly authorized as costs of response under section 101(23), 42 U.S.C. § 9601(23)."); *United States v. Wade*, 577 F.Supp. 1326, 1333 n. 4 (E.D.Pa.1983) (cost of "investigating, monitoring, testing, and evaluating the situation at the Wade site . . . is recoverable as a cost of removal."); *United States v. Conservation Chem. Co.*, 619 F.Supp. 162, 186 (W.D.Mo. 1985) (government response costs include investigations, monitoring, and testing).

Courts have also held that section 104(b) entitles the United States to recover its litigation costs from liable parties. *Northeastern Pharmaceutical & Chem. Co.*, 579 F.Supp. at 851 ("the Court finds that under CERCLA, the defendants are jointly and severally liable for, and the plaintiff is entitled to recover, all litigation costs, including attorney fees, incurred by plaintiff."); *United States v. South Carolina Recycling & Disposal, Inc.*, 653 F.Supp. 984, 1009 (D.S.C.1984) (holding the United States can recover litigation expenses), *aff'd in part* and *vacated in part* in *United States v. Monsanto Co.*, 858 F.2d 160 (4th Cir.1988), *cert. denied*, —— U.S. ——, 109 S.Ct. 3156, 104 L.Ed.2d 1019; *Conservation Chem. Co.*, 619 F.Supp. at 186 (following *Northeastern Pharmaceutical & Chem. Co.*).

Courts have emphasized that liability extends to *all* response costs. *United States v. R.W. Meyer, Inc.*, 889 F.2d 1497 (6th Cir.1989). These costs also include enforcement costs and administrative expenses. *South Caro-*

lina Recycling & Disposal, 653 F.Supp. at 1009. In addition, the United States has also been awarded indirect costs. *R.W. Meyer*, 889 F.2d at 1504. To the extent response or remedial actions are necessary, section 107 (a)(4)(A):

> contemplates that those responsible for hazardous waste at each site must bear the *full* cost of cleanup actions and that those costs necessarily include both direct costs and a proportionate share of indirect costs attributable to each site. In essence then, the allocation of the indirect costs to specific cleanup sites effectively renders those costs direct costs attributable to a particular site.

Id. at 1504 (emphasis in original).

Section 107(a)(4)(A) refers to "all costs of removal or remedial action" without specifying the source of the expenditures of the United States. 42 U.S.C. § 9607(a)(4)(A) (Supp. V 1987).

2. Burden of Proof on Response Costs

As stated above, pursuant to section 107(a)(4)(A) of CERCLA, defendants found liable must pay "*all* costs of removal or remedial actions incurred by the United States Government . . . not inconsistent with the national contingency plan." 42 U.S.C. § 9607(a)(4)(A) (emphasis added). The NCP, 40 C.F.R. § 300-300.71, was promulgated pursuant to section 105 of CERCLA, 42 U.S.C. § 9605. The NCP is the EPA regulation that establishes procedures for selection of response actions. "As long as the actions taken by the government were in harmony with the [NCP], the costs incurred pursuant to those actions are presumed to be reasonable and therefore recoverable." *Northeastern Pharmaceutical & Chem. Co.*, 579 F.Supp. at 851.

Once the United States has proven that it incurred response costs, the defendants bear the burden of proving

that the response costs sought by the United States are inconsistent with the NCP. *Northeastern Pharmaceutical & Chem. Co.*, 810 F.2d at 747.

3. Prejudgment Interest

Prejudgment interest was recoverable even before the 1986 amendments to CERCLA, the Superfund Amendments and Reauthorization Act of 1986 ("SARA") (signed into law on October 17, 1986). *Northeastern Pharmaceutical & Chem. Co.*, 579 F.Supp. at 852. The SARA amendments to section 107(a) of CERCLA provide that "[t]he amounts recoverable in an action under this section shall include interest on the amounts recoverable. . . . Such interest shall accrue from the later of (i) the date payment of a specified amount is demanded in writing, or (ii) the date of the expenditure concerned." 42 U.S.C. § 9607(a) (Supp. V 1987). Interest rates are the rates of interest on investments of the Hazardous Substance Superfund. *Id.*

Prejudgment interest is awarded on amounts incurred prior to SARA. *United States v. Northernaire Plating Co.*, 685 F.Supp. 1410, 1421, *aff'd sub. nom. United States v. R.W. Meyer, Inc.*, 889 F.2d 1497 (6th Cir. 1989).

G. *General Findings of Fact on United States' Response Costs*

1. In responding to the release or threatened release of hazardous substances in and around the Hardage Site, the EPA and the Department of Justice Land and Natural Resources Division ("LNRD") incurred both direct and indirect costs. GE 247 at 3; McGeehin Aff. at 3.

2. The direct costs of the EPA included salary expenses of EPA regional and headquarters employees who worked on Hardage Site response actions, travel, and costs for other services provided by private vendors associated

with the work at the Hardage Site. GE 247. In addition, various EPA contractors provided a variety of investigative, enforcement, and remedial activities at the Hardage Site including site sampling, hydrogeologic studies, aerial photography, and others. GE 247.

3. The LNRD also incurred direct costs in the prosecution of the *Hardage* case. These costs included "salary expenses for time charged to the Hardage case by LNRD attorneys and paralegals" and "other costs charged directly to the Hardage case," such as "travel expenses, court reporter fees, and litigation support" expenses. McGeehin Aff at 3.

4. In addition, both the EPA and the DOJ incurred indirect costs in conjunction with the work performed at the Hardage Site. Indirect costs are costs that are necessary to support response efforts at specific sites, but which cannot be directly identified with a specific site. Menchaca Aff at 2. The DOJ indirect costs are the type of costs necessary "to support the functioning of LNRD attorneys and paralegals in their performance on individual cases, but which are not charged directly to individual cases." McGeehin Aff at 5.

5. These indirect DOJ costs "include, but are not limited to, indirect labor (e.g., attorney and paralegal administrative time, secretarial support, accounting support, record keeping and time keeping), compensated absences, (e.g., vacation, holiday, and sick time), fringe benefits, office space and utilities, supplies, and training." McGeehin Aff at 5.

6. The EPA also incurred similar indirect costs, including agency "personnel and program overhead costs such as employee supervision and fringe benefits, program management, administrative support, rent, utilities, telephone, and other indirect costs." GE 247 at 3.

7. The purpose of an indirect cost determination is to determine the total cost for the work performed by the

EPA and the DOJ at a Superfund site, in this case the Hardage Site. VII at 1385; Menchaca Aff. at 3.

8. Methodologies developed by the EPA and the LNRD are used to allocate these indirect costs to specific sites, based on criteria detailed in the affidavits and testimony of William Cooke, Joseph Manchaca, and Patrick A. McGeehin.

H. *Additional Findings of Fact—DOJ Direct Costs*

1. The LNRD incurred costs in prosecuting cases under CERCLA. McGeehin Aff at 1-2. These costs included salary expenses, other direct costs, such as travel expenses, court reporter fees, and litigation support. *Id.* at 3.

2. The LNRD attorneys and paralegals identify their time spent on case and noncase activities. McGeehin Aff at 2.

3. Under a contract with the DOJ, the accounting firm of Rubino & McGeehin accumulated the costs incurred by the LNRD identified with specific cases. McGeehin Aff at 1-2.

4. Rubino & McGeehin prepared a summary of the costs incurred by the LNRD in the prosecution of the *Hardage* case for fiscal years 1987 and 1988 and the first two quarters of fiscal year 1989. McGeehin Aff. at 3 & Attachments 1-4.

5. The summary reflects that DOJ direct labor costs incurred at the Hardage Site during the first two quarters of 1989 totaled $93,934. McGeehin Aff. Attachment 1.

6. The summary also includes other direct costs incurred by the LNRD in private vendor costs for the first two quarters of 1989 in the amount of $831,750. McGeehin Aff. Attachment 4. These costs included expert witness fees, court reporter fees, litigation support, microfilming, and travel. *Id.*

7. The HSC objected to the summary because it had not had an opportunity to review this documentation.

8. However, the Court's Order Granting Plaintiff's Motion for Partial Summary Judgment on Response Cost Issues (Dec. 8, 1989) (docket sheet No. 2286), granted the United States a declaratory judgment for all future response costs. Therefore, if the United States presents proof that these costs were incurred, it is entitled to recover these costs.

9. The United States incurred costs of at least $93,934 in DOJ payroll expenses in the prosecution of the *Hardage* case during the first two quarters of fiscal year 1989. McGeehin Aff. Attachment 1.

10. In addition, the United States incurred other direct costs of at least $831,750 in the prosecution of the *Hardage* case during the first two quarters of fiscal year 1989. McGeehin Aff. Attachment 4.

I. *Conclusion of Law—DOJ Direct Costs*

1. The United States met its burden of proving that it incurred DOJ direct payroll costs in the prosecution of the *Hardage* case during the first two quarters of fiscal year 1989.

2. The DOJ direct payroll costs in the amount of $93,934 are response costs that the United States is entitled to recover from the defendants herein.

3. The United States also met its burden of proving that it incurred other direct costs of the DOJ in the prosecution of the *Hardage* case during the first two quarters of fiscal year 1989.

4. The DOJ's other direct costs in the amount of $831,750 are response costs that the United States is entitled to recover from the defendants herein.

5. These direct costs are response costs that the United States is entitled to recover from the defendants. 42 U.S.C. § 9607(a)(4)(A).

J. *Additional Findings of Fact—DOJ Indirect Costs*

1. The purpose of the LNRD is to prosecute and defend cases. McGeehin Aff. at 5.

2. The indirect costs of the LNRD are "incurred to support the functioning of LNRD attorneys and paralegals in their performance on individual cases, but which are not charged directly to individual cases." McGeehin Aff. at 5.

3. A list of the types of costs included in DOJ indirect costs is found in Finding of Fact No. 5 in Section X(G) of this Order.

4. The accounting firm of Rubino & McGeehin contracted to compute the indirect costs of Superfund cases for the LNRD from fiscal year 1987 to the present, under a system designed by Rubino & McGeehin. McGeehin Aff. at 5; VI at 1320.

5. The LNRD "system of allocating indirect costs treats all non-case specific costs [of the LNRD] as indirect costs allocable to cases." McGeehin Aff. at 5.

6. The LNRD indirect cost allocation system allocates indirect costs to specific cases through use of indirect cost rates for specific fiscal years. McGeehin Aff. at 5.

7. The LNRD indirect cost rates are calculated by dividing total LNRD indirect costs for a fiscal year (total payments less direct case specific costs) by total LNRD direct labor costs for that fiscal year (*i.e.*, attorney and paralegal direct labor costs) to produce an indirect cost rate for that year. McGeehin Aff. at 5; VI at 1320.

8. Rubino & McGeehin "removed from the indirect cost rate certain costs relating solely to non-Superfund activities, such as costs for which the DOJ is reimbursed by agencies other than EPA." McGeehin Reb. Decl. at 3.

9. Through the application of the indirect cost rate, only a fraction of LNRD indirect costs is allocated to CERCLA cases. For fiscal year 1987, 73.37% of the total indirect cost was allocated to non-CERCLA cases. Similarly, in fiscal year 1988, 70.92% of the total LNRD indirect cost was allocated to non-CERCLA cases. McGeehin Aff. at 6.

10. "[I]nteragency agreements between EPA and DOJ dated March 5, 1987 and August 20, 1987 . . . provide for reimbursement of indirect costs allocable to Superfund cases, including the Hardage case." McGeehin R. Decl. at 6.

11. The HSC argued the ratio of indirect to direct costs for DOJ was too high when compared to the private sector. Matunas Decl. at D-11.

12. However, the direct labor hourly rate for LNRD attorneys for fiscal years 1987 and 1988 for the *Hardage* case was $19.38. McGeehin Aff. Attachment 5. Were LNRD attorneys to receive higher salaries, the ratio of indirect to direct costs would fall. VI at 1328.

13. The "fully loaded" rates for DOJ attorneys and paralegals working on the *Hardage* case ("direct labor plus all indirect costs allocated to the case") of $59.99 for attorneys and $41.98 for paralegals are reasonable in comparison to the private sector. McGeehin R.Decl. at 2.

14. Matunas' recalculated DOJ indirect cost in Opinion No. 3 of his affidavit did not include office space, postage for correspondence related to the Hardage Site, telephone charges made by DOJ attorneys prosecuting the case, and equipment rental utilized by DOJ attorneys prosecuting the case. McGeehin R.Decl. at 3.

15. General government expenses as defined by OMB Cir. A-87 are excluded from DOJ indirect costs allocated

to Superfund cases, including *Hardage*. McGeehin R. Decl. at 4.

16. Fixed costs as well as variable costs can be allocated as indirect costs. McGeehin R.Decl. at 4.

17. The DOJ audit reports "took no exception to the indirect cost rate methodology" developed by Rubino & McGeehin. McGeehin R.Decl. at 5.

18. The LNRD indirect cost allocation system is based on generally accepted accounting principles. McGeehin R.Decl. at 5.

19. The methodology used to calculate DOJ indirect costs is fair and equitable.

20. The DOJ indirect costs claimed for the *Hardage* case, as reflected in the cost summary included in Attachments 1 through 5 to McGeehin's Affidavit, were computed through application of the indirect cost rates for fiscal years 1987, 1988, and 1989. McGeehin Aff. at 3.

21. Thus, the total LNRD indirect costs incurred in the *Hardage* case through fiscal year 1989 are $1,042,489. McGeehin Aff. Attachment 1.

K. *Conclusions of Law—DOJ Indirect Costs*

1. The United States met its burden of proving that it incurred the DOJ indirect costs in conjunction with the *Hardage* case. The HSC defendants failed to prove that these DOJ indirect costs are inconsistent with the National Contingency Plan.

2. The indirect costs incurred by the United States in prosecuting the *Hardage* case, as identified in paragraph 21 above in the amount of $1,042,489, are response costs that the United States is entitled to recover from the defendants herein. 42 U.S.C. § 9607(a)(4)(A) (Supp. V 1987); *R.W. Meyer,* 889 F.2d at 1504.

L. *Additional Findings of Fact—EPA Indirect Costs*

1. In 1983, the certified public accounting firm of Ernst & Whinney contracted with the EPA to, among other things, develop a "methodology for calculating the indirect cost of work performed by the EPA under the Superfund program." Menchaca Aff. at 1.

2. In preparing the indirect cost methodology, Ernst & Whinney considered certain Office of Management and Budget Circulars including A-87, "Cost Principles for State and Local Governments", and A-21, "Cost Principles for Educational Institutions". Menchaca Aff. at 2; GE 240. In addition, the methodology was designed to comply with standards issued by the Cost Accounting Standards Board. Menchaca Aff. at 2.

3. The indirect cost methodology developed by Ernst & Whinney for the EPA was described in a report prepared and transmitted to the EPA by letter dated August 26, 1983. GE 241; Menchaca Aff. at 1.

4. The Ernst & Whinney Superfund cost allocation process involved:

(a) Identifying the final cost objective—in this case, work performed by the EPA at a Superfund site. Menchaca Aff. at 3.

(b) Identifying direct costs associated with remedial and response activities at a Superfund site, such as labor costs of EPA personnel working directly on the site. *Id.*

(c) Identifying "other organizational units that support the people or the process" of remedial or response activities at the site. An example is the EPA payroll department, which processes information to pay personnel working on the site. *Id.*

(d) Identifying costs associated with these support services and determining an appropriate basis on which to equitably allocate these costs to the people and processes they support. *Id.*

(e) Determining a way to allocate these costs to the various Superfund sites on which the personnel worked. *Id.* at 4.

5. The EPA implemented the methodology developed by Ernst & Whinney to calculate and allocate the indirect costs of work performed by the EPA at Superfund sites. Cooke Aff. at 2.

6. In implementing the Ernst & Whinney indirect cost methodology, the EPA identified each organization within the EPA that provided support to the Superfund program. Cooke Aff. at 8.

7. One such organization was the Office of Solid Waste and Emergency Response in the EPA headquarters office, which provides technical assistance, administrative support, and policy guidance. Juszczak Decl. at 1-8.

8. The EPA then gathered financial information from the EPA's Financial Management System concerning each support organization. Cooke Aff. at 9.

9. The EPA used an allocation statistic to distribute the indirect costs of each organizational unit to Superfund and non-Superfund activities. Generally, this statistic was based on the number of persons employed in each "benefitted" office. Cooke at 9.

10. In allocating indirect costs, the EPA followed a three-step process:

(a) In stage one, the EPA determined, for each fiscal year, the total amount of EPA administrative support costs for EPA headquarters and the 10 regional EPA offices that support CERCLA response actions. The EPA allocated part of the headquarters administrative support costs to each of its 10 regional offices. Cooke Aff. at 11. These costs were then added to each regional office's administrative costs that support such action.

(b) In stage two, the EPA distributed regional administrative costs to the regional program offices and also

distributed stage one costs to regional program offices. Cooke Aff. at 11-12.

(c) In stage three, EPA determined all of the costs of the Superfund program. The EPA then distributed these costs to the site and nonsite activities of the regional Superfund program personnel. *Id.* at 12.

11. The EPA then calculated an indirect cost rate for each region for each fiscal year by dividing the region's total site costs as determined by the process described above, by the total number of hours billed by the regional Superfund personnel in a given fiscal year. Cooke Aff. at 13. The indirect cost rates were expressed as dollar amounts to facilitate application of these rates.

12. Because the purpose of the Superfund is to clean up the nation's hazardous waste sites, generally accepted accounting principles would have permitted the United States to allocate all of the costs of the Superfund program to sites. Cooke Aff. at 13; VI at 1306.

13. The EPA's indirect cost allocation is conservative because many costs that could have been allocated to sites have been excluded. For instance, capital equipment usage is not allocated to sites, the EPA excludes costs for the EPA Office of Research and Development's ("ORD") work on Superfund issues, the EPA excludes non-site-specific costs associated with contractors' site work, and the EPA's allocation transfer payments to other federal agencies for Superfund response efforts are excluded. Cooke Aff. at 15-16.

14. OMB Circular A-87 permits the allocation of grantee departmental indirect costs. Menchaca R.Aff. at 2. By analogy, the inclusion of the cost of the Office of the Administrator of the EPA as an allocable indirect cost is consistent with OMB Circular A-87. *Id.* This inclusion does not represent " 'general costs of government' within the meaning of OMB Circular A-87." *Id.* at 2-3.

15. Fixed costs as well as variable costs can be allocated as indirect costs. Menchaca R.Aff. at 4.

16. The methodology employed to calculate EPA indirect costs allocates to specific sites less than 35% of the indirect costs of the Superfund program. Cooke Aff. at 17.

17. The EPA indirect cost allocation system is based on generally accepted accounting principles. Menchaca Aff. at 2.

18. The methodology used to calculate EPA indirect costs is fair and equitable. Menchaca Aff. at 2; Cooke Aff. at 6, 14-15.

19. The indirect cost rates computed by the EPA for EPA Region VI were $66 per hour in fiscal year 1983, $60 per hour in fiscal year 1984, $54 per hour in fiscal year 1985, $53 per hour in fiscal year 1986, and $52 per hour in fiscal year 1987. The provisional rates for fiscal years 1988 and 1989 were $52 per hour in fiscal year 1988, and $52 per hour in fiscal year 1989. Supplemental Joint Statement of Uncontested Facts para. 117, at 37.

20. The number of site-specific hours billed to the Hardage Site by EPA Region VI personnel in program divisions in the fiscal years 1983 through 1988 were: 1983—587; 1984—409; 1985—1,105.5; 1986—1,727.5; 1987—1,817; 1988—2,468; 1989—700. Supplemental Joint Statement of Uncontested Facts para. 118, at 37.

21. The EPA's indirect costs are calculated by multiplying the number of site-specific hours billed by EPA Region VI personnel in program divisions for that year (Fact No. 20) by the indirect cost rate for that year (Fact No. 19).

22. Thus, the total of EPA indirect costs incurred on the Hardage Site through fiscal year 1988 was $473,756.50.

M. *Conclusions of Law—EPA Indirect Costs*

1. The United States met its burden of proving that it incurred these EPA indirect costs. The HSC defendants failed to prove these EPA indirect costs are inconsistent with the National Contingency Plan.

2. The indirect costs incurred by the United States in performing removal and remedial actions at the Hardage Site, as identified at paragraph 22 above in the amount of $473,756.50, are response costs that the United States is entitled to recover from the defendants herein. *See* 42 U.S.C. § 9607(a)(4)(A) (Supp. V 1987); *R.W. Meyer*, 889 F.2d at 1504.

N. *Additional Findings of Fact—Rent Charges ("SLUC")*

1. The General Services Administration ("GSA") administers the real property activities of the United States government through its Management Division of the Public Buildings Service. Van der Walde Aff. at 2. The real property is either owned or leased by the United States.

2. The GSA funds its real property management activities through user charges to "customer" federal agencies, including the DOJ and the EPA, which occupy GSA-controlled space. Van der Walde Aff. at 3.

3. Congress authorized the GSA to collect user charges through the Public Buildings Amendments of 1972 (Public Law 92-313). Van der Walde Aff. at 3.

4. Until 1987, the system used to fix these user charges was called Standard Level User Charges ("SLUC"). With the beginning of fiscal year 1987, the Rent System replaced SLUC. Van der Walde Aff. at 3.

5. Rent System rates are based on five-year cycles. Prior to each cycle, the GSA establishes a base rate for each type of space available in GSA buildings. Van der

Walde Aff. at 3. Rates based upon appraisals by professional real estate appraisers are developed for each building. Appraisers compare a GSA building to similar buildings nearby to determine the price "a private landlord would charge a private tenant for GSA space." *Id.*

6. The GSA provides its tenants with services including janitorial services, utilities, maintenance, and security. The cost of these services is included in the Rent System. Van der Walde Aff. at 3-4.

7. The GSA rent rates also vary according to the specific finish of the space (*e.g.*, office space, automated data processing space, storage space). Burrell Decl. at 3.

8. The GSA adjusts the rent rates annually to reflect inflation at the building location, as measured by the Consumer Price Index ("CPI"), and changes in operating costs. Van der Walde Aff. at 4.

9. Before implementation, proposed rent rates are subject to review and approval by the Office of Management and Budget. Van der Walde Aff. at 4.

10. All federal agencies are charged rent for all buildings pursuant to the Rent System. Van der Walde Aff. at 6.

11. Rent paid to the GSA by customer federal agencies pays the capital and operating expenses of the GSA's real property management activities. Van der Walde Aff. at 3.

12. Rent charge to agencies for buildings owned or leased by the United States is established under the above-described appraisal system and represents actual costs to the agencies, including EPA and DOJ. Van der Walde Aff. at 6; Burrell Decl. at 4.

13. For facilities within the DOJ that are located outside the National Capital Region ("NCR"), the actual rent charged by the GSA is passed on through the Justice

Management Division directly to the DOJ division that occupies the space. Burrell Decl. at 3.

14. The Justice Management Division establishes a DOJ rate for each type of space occupied by a DOJ division such as the LNRD. The DOJ base average rate is determined by totaling the GSA rent charge for each type of space occupied in the NCR and dividing that number by the total number of square feet of the type of space occupied. Burrell Decl. at 3.

15. The final DOJ rate is calculated by adding to the average office space rent charge certain projected DOJ facilities costs, which DOJ is responsible for paying, such as overtime heating, ventilation and air conditioning, overtime guard service, parking, and building maintenance; these are charges that exceed the GSA standard rent charges. Burrell Decl. at 3.

16. Rent and utility costs for space occupied by the EPA and the DOJ personnel who worked on the Hardage Site are "indirect costs."

17. The space occupied by the DOJ and the EPA was necessary for all of the work these employees did concerning the Hardage Site.

18. These space costs attributable to the work performed by EPA and DOJ employees concerning the Hardage Site have been allocated through EPA and DOJ indirect cost methodologies. Burrell Decl. at 4.

O. *Conclusions of Law—Rent Charges ("SLUC")*

1. The rent component of DOJ and EPA indirect costs is a recoverable cost under section 107(a)(4)(A). 42 U.S.C. § 9607(a)(4)(A) (Supp. V 1987); *R.W. Meyer,* 889 F.2d at 1504. These indirect costs are attributable to response efforts, because they represent a portion of overhead expenses needed to support EPA and DOJ direct response activities at the Hardage Site. *R.W. Meyer,* 889 F.2d at 1504.

P. *Additional Findings of Fact—Prejudgment Interest*

1. The United States filed the Complaint in this action on June 25, 1986. The Complaint requested payment of a specified amount and stated that the United States had incurred, as of the date of the Complaint, "in excess of $1.4 million" in response costs. *Id.* para. 2, at 2.

2. Since the date of the filing of the Complaint, prejudgment interest has accrued on the costs incurred by the United States in taking removal and remedial actions in response to conditions at the Hardage Site.

3. Rubino & McGeehin, a certified public accounting firm, calculated prejudgment interest based on the following procedures, bases, and assumptions. For EPA costs:

> 1. Costs were summarized by the month and fiscal year in which they were incurred based on information provided in the EPA cost summary, dated May 5, 1989 and which is an exhibit to the accompanying Affidavit of Nellie Boone.
>
> 2. Costs identified in the EPA summary as incurred in a particular month were assumed to be incurred on the fifteenth (15th) of the month and as a result fifteen (15) days of interest were accrued on those costs for that month, except for those incurred prior to and during June 1986 which accrued five (5) days of interest for June 1986.
>
> 3. Interest has been compounded on an annual basis.
>
> 4. For purposes of the computation, the cumulative balance is treated as accruing 30 days of interest in each month.
>
> 5. The interest rates used are the rates earned by the Hazardous Substance Trust Fund as provided to us by EPA.

6. Interest has been computed from June 25, 1986 through May 31, 1989.

McGeehin S.Decl. at 2-3.

Certain costs listed in the EPA summary were not included in the prejudgment interest calculation as listed in McGeehin's Supplemental Declaration at page 3. The total of the costs excluded from the EPA prejudgment interest calculation were $793,976.48. McGeehin S.Decl. at 3. Additional costs totaling $317,672.64 were excluded per the government's July 3, 1990, and July 25, 1990, filings.

For DOJ costs:

1. Costs were summarized by quarter for fiscal years 1987, 1988 and 1989.

2. For fiscal years 1987, 1988 and 1989 costs were assumed to be incurred at the midpoint of the quarter for which they were summarized.

3. Interest has been compounded on an annual basis.

4. Costs identified or assumed as incurred in a particular month were assumed to be incurred on the fifteenth (15th) of the month and as a result fifteen (15) days of interest was accrued on those costs for that month.

5. For purposes of the computation, the cumlative balance is treated as accruing 30 days of interest in each month.

6. The interest rates used are the rates earned by the Hazardous Substance Trust Fund as discussed in the preceding paragraphs.

7. Interest has been computed from the date the costs were incurred through May 31, 1989.

McGeehin S.Decl. at 3-4.

4. The total accrued interest, according to the revised schedule of prejudgment interest for EPA costs, is $469,825.23. McGeehin S.Decl. at 3 (as revised by July 3, 1990, and July 25, 1990, filings).

5. The total accrued interest, according to the revised schedule of prejudgment interest for DOJ costs, is $267,898.18. McGeehin S.Decl. at 4.

6. The prejudgment interest that has accrued on the costs incurred by the United States for response activities at the Hardage Site, calculated in accordance with the methodology described in the Supplemental Affidavit of Patrick A. McGeehin, is at least $737,723.41. The Court approves this methodology.

Q. *Conclusions of Law—Prejudgment Interest*

1. The United States has met its burden of proving that it is entitled to prejudgment interest.

2. The United States is entitled to recover prejudgment interest accruing from June 25, 1986, the date of the Complaint, in the amounts of $469,825.23 on EPA costs, and $267,898.18 on DOJ costs, for a total of at least $737,723.41. 42 U.S.C. § 9607(a) (Supp. V 1987).

R. *Conclusion*

For the reasons set forth above, the United States is awarded its response costs incurred in conjunction with the Hardage Site and this case in the following amounts: the DOJ direct costs for the first two quarters of fiscal year 1989 of $93,934; other direct costs of DOJ for the first two quarters of fiscal year 1989 of $831,750; DOJ indirect costs of $1,042,489; EPA indirect costs of $473,756.50 through the first quarter of fiscal year 1989; and prejudgment interest in the amount of $737,723.41 through May, 1989. The total award of response costs and prejudgment interest is $3,179,652.91.

XI. HSC RESPONSE COSTS AND COUNTERCLAIMS

A. *Introduction*

When the HSC defendants answered the Complaint in this action on September 8, 1986, they asserted certain counterclaims against the United States. First, the HSC contended that the United States is a liable person under the provisions of 42 U.S.C. § 9607(b)(3)-(4) and requested declaratory judgment concerning the United States' liability. Next, the HSC counterclaimed for response costs that the HSC defendants incurred in investigating the nature and extent of the contamination at the Hardage Site. Answer and Counterclaims at para. 34 (Sept. 8, 1986) (filing No. 78). The HSC argued that the United States is liable for "all response costs that have been incurred and will be incurred, in a manner consistent with the National Contingency Plan." *Id.* In addition, the HSC filed counterclaims for contribution, indemnity, and setoff or recoupment.[34]

In the Supplemental Joint Statement of Uncontested Facts, the United States agreed as follows:

> Various departments, agencies and instrumentalities of the United States arranged for disposal or treatment by contract agreement or otherwise of approximately 920,000 gallons of hazardous substances at the Hardage site.

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[34] On November 22, 1989, this Court dismissed the HSC's counterclaim for indemnity and portions of the HSC's counterclaim for contribution. Order Granting Government's Motion to Dismiss Third, and Fourth Counterclaims for Contribution and Indemnity (Nov. 22, 1989) (filing No. 2224). That same day, the Court denied the United States' motion to dismiss the HSC's recoupment counterclaim. Order Denying Government's Motion to Dismiss Fifth Counterclaim for Recoupment (Nov. 22, 1989) (filing No. 2223). Therefore, only the HSC's recoupment counterclaim and the remaining portion of the contribution counterclaim proceeded to trial.

Supplemental Joint Statement of Uncontested Facts at para. 49. By this statement, the United States stipulated to liability under section 107(a)(3) of CERCLA, 42 U.S.C. § 9607(a)(3).

At trial the HSC asserted inconsistent positions concerning the extent of the United States' liability in this matter. On the one hand under the HSC's recoupment counterclaim, the HSC argued the United States must pay 50% of the cleanup costs of *Hardage,* because an adequate containment remedy could have been implemented years before had the United States not taken over responsibility for the Hardage site from the OSDH. On the other hand, the HSC contends the United States must pay $9.5 million in HSC response costs because all of the HSC's response activities were necessary to adequately understand the character of the site, to evaluate the release or threat of release from the site, to fill the gaps in the EPA's data, and to analyze the appropriate alternative containment remedy. In addition, the HSC requests that the Court consider the equities of the case in fashioning relief under section 106(a) of CERCLA. 42 U.S.C. § 9606(a) (1982).

For the reasons set forth below, based on the claims and evidence presented during this phase of the litigation, the Court finds that the HSC should be awarded only $3,716,695.23 in response costs under 42 U.S.C. § 9607 (a)(4)(B).[35] In addition, the Court finds the United States should pay its fair share of the HSC's response costs, the response costs incurred by the United States EPA, and the cost of the remedy ordered based on the amount of waste disposed at the Hardage Site by the departments of the federal government, or 8.36%.

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[35] The Court expresses no opinion at this time, one way or the other, as to whether this Order precludes recovery of the HSC response costs from private parties pursuant to 42 U.S.C. § 9607 (a) (4) (B).

B. *Stipulations Regarding HSC's Counterclaim For Cost Recovery*

On November 21, 1989, the parties provided the Court with a written stipulation in this matter. The Court adopts this stipulation as part of its findings and conclusions. Those portions of the stipulation that relate to the HSC counterclaim for cost recovery read:

119. The HSC's costs for which it seeks recovery have been summarized and recorded under an accrual basis of accounting.

120. The HSC installed and has maintained a chain link fence and warning signs around the Hardage site in accordance with the Stipulation Regarding Installation and Maintenance of a Fence at the Hardage site between the United States and the HSC Defendants filed with the United States District Court for the Western District of Oklahoma on April 29, 1987 ("Fence Stipulation").

121. Installation of a fence to limit access to and provide security at a Superfund site constitutes a response action under CERCLA.

122. By letter dated January 28, 1988, the completed work pursuant to the fence stipulation has been approved by the United States. [Letter from Mary Ellen McClary to Steven M. Morgan, January 28, 1988].

123. The work performed by HSC Defendants pursuant to the Fence Stipulation is consistent with the National Contingency Plan.

124. The HSC constructed a water line to provide an alternative water supply to residents living near the Hardage site and has provided an alternative water supply to them.

125. Providing an alternative water supply constitutes a response action under CERCLA.

126. The HSC performed certain interim repairs of the soil cover over the Barrel Mound pursuant to the stipulation Regarding Interim Repair and Maintenance of Hardage Site Source Area, which was filed with the Court on February 2, 1988 ("Repair Stipulation").

127. The HSC performed work at the site in accordance with the Work Plan attached to the Repair Stipulation.

128. The HSC's work pursuant to the Repair Stipulation constitutes a response action under CERCLA.

129. The HSC's work pursuant to the Repair Stipulation is consistent with the National Contingency Plan.

130. The HSC performed a Remedial Investigation/ Feasibility Study ("RI/FS") for the second operable unit at the Hardage site to determine the existence and extent of contamination at the site, to determine the existence and extent of any threat to public health or welfare or the environment posed by the migration of any contamination at the site, and to determine and evaluate alternatives for any appropriate remedial response actions necessary to address the second operable unit at the Hardage site.

131. The conduct of a remedial investigation/feasibility study is a response action under CERCLA.

132. The United States and the HSC Defendants entered into a Partial Consent Decree governing the performance of the Remedial Investigation/ Feasibility Study for the second operable unit, which was entered by the Court.

133. The HSC has conducted a number of site investigations, studies, tests, and data-gathering efforts at the Hardage site.

Supplemental Joint Statement at 37-38.

C. *Witnesses*

Three principal HSC witnesses supported its request for private party response costs under section 107(a)(4)(B). The witnesses and their topics included: Richard Bost and Benjamin Costello, the necessity of investigative activities performed by the HSC to design an appropriate remedy for *Hardage* and the remedial measures taken to protect the public health; and Thomas Matunas and Benjamin Costello, the costs of the HSC's response activities and the internal controls over the HSC's costs.

Two principal United States witnesses testified concerning the necessity and reasonableness of the costs claimed by the HSC, Dr. Kirk W. Brown and John B. Robertson. Marc A. Jewett's testimony addressed the accuracy and quality of certain HSC field studies and investigations. Finally, Patrick A. McGeehin offered opinions regarding the inclusion of litigation costs in the HSC's response cost claim and the sufficiency of the HSC's cost documentation.

To attempt to support the HSC's recoupment counterclaim and equity argument, the HSC presented several witnesses, including Mark S. Coleman, John A. Cherry, J. Mark Schmittle, Richard Bost, and Benjamin Costello.

D. *Exhibits*

The exhibits offered by the HSC to support its response cost claim included: DE 6-9, 11-14, 19-22, 49, 109, 111-36, and 146-53. The United States introduced the following exhibits on this issue: GE 281a-p, 283-87.

Exhibits offered by the HSC to support its recoupment counterclaim and equity argument included: DE 1-52, 142-45.

E. *Contentions of the Parties*

As to its response cost claim, the HSC contends the United States, as a person liable under section 107(a) of CERCLA, must pay all of the $9.5 million in HSC response costs at the Hardage Site. The HSC argues the costs in question are those the HSC incurred in investigating and remediating the site. The HSC urges that the studies and investigations were necessary to accurately characterize the Hardage Site and to design the appropriate remedy for *Hardage,* and therefore, the costs of such activities are "necessary" and "consistent with the national contingency plan." 42 U.S.C. § 9607(a)(4)(B) (Supp. V 1987). Costs of other interim remedial measures were necessary to protect the public health, argues the HSC. Finally, the HSC stresses that it maintained a system of internal controls that assured that the costs are accurate and reasonable.

As to its recoupment counterclaim and equity argument, the HSC contends the Court should limit the relief awarded against the HSC and apportion a substantial share of the Hardage Site cleanup obligations to the United States. Finally, the HSC argues the fault for much of the site's condition and the need for much of the expense lies with the United States for preventing remediation of the site in 1982, for failing to take steps to protect human health and the environment, and for failing to adequately investigate the site.

In response to the HSC's cost claim, the United States contends the tests conducted by the HSC were designed to support the HSC's litigation position concerning HSC's containment remedy proposal. The United States asserts that the EPA's approval was necessary for all response actions taken after the date of the enactment of the SARA amendments, and that only four activities of the HSC were not precluded by this approval requirement. As to all other costs, the United States argues that the HSC will be unable to demonstrate it received EPA ap-

proval. Finally, the United States contends the HSC's response activities were neither necessary nor consistent with the NCP, and that the HSC failed to meet the detailed NCP public comment requirements of 40 C.F.R. § 300.71.

In response to the HSC's recoupment counterclaim, the United States responds that the HSC failed to show a nexus between the relief sought by the United States and the transaction or occurrences that the HSC's recoupment counterclaim asserts. Finally, the United States argues it should pay only its fair share of the HSC's response costs.

F. *Legal Discussion*

1. Private Party Response Costs

As discussed in Section X of this Order, CERCLA provides for the recovery from liable persons of "all costs of removal or remedial action incurred by the United States . . . not inconsistent with the national contingency plan." 42 U.S.C. § 9607(a)(4)(A) (Supp. V 1987). The CERCLA also contemplates the recovery of private party response costs from liable persons as follows: "any other necessary costs of response incurred by any other person consistent with the national contingency plan." 42 U.S.C. § 9607(a)(4)(B) (Supp. V 1987).

The CERCLA does not define "necessary costs of response." *T & E Indus., Inc. v. Safety Light Corp.*, 680 F.Supp. 696, 705 (D.N.J.1988). However, "response" under CERCLA means "remove, removal, remedy, and remedial action, all such terms (including the terms 'removal' and 'remedial action')." 42 U.S.C. § 9601(25) (Supp. V 1987) (footnote omitted). For CERCLA purposes, "remove" and "removal" mean:

> [T]he cleanup or removal of released hazardous substances from the environment, such actions as may

> be necessary taken in the event of the threat of release of hazardous substances into the environment, such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances, the disposal of removed material, or the taking of such other activities as may be necessary to prevent, minimize, or mitigate damage to the public health or welfare or to the environment, which may otherwise result from a release or threat of release.

42 U.S.C. § 9601(23) (Supp. V 1987). Included in the definition are specific removal actions such as security fencing or other measures to limit access, and the provision of alternative water supplies. *Id.*

The CERCLA defines "remedy" or "remedial action" as:

> [T]hose actions consistent with permament remedy taken instead of or in addition to removal actions in the event of a release or threatened release of a hazardous substance into the environment, to prevent or minimize the release of hazardous substances so that they do not migrate to cause substantial danger to present or future public health or welfare or to the environment. The term includes, but is not limited to, such actions at the location of the release as storage, confinement, perimeter protection using dikes, trenches, or ditches, clay cover, neutralization, cleanup of released hazardous substances and associated contaminated materials, recycling or reuse, diversion, destruction, segregation of reactive wastes, dredging or excavations, repair or replacement of leaking containers, collection of leachate and runoff, onsite treatment or incineration, provision of alternative water supplies, and any monitoring reasonably required to assure that such actions protect the public health and welfare and the environment. The term includes the costs of permanent relocation of

> residents and businesses and community facilities where the President determines that, alone or in combination with other measures, such relocation is more cost-effective than and environmentally preferable to the transportation, storage, treatment, destruction, or secure disposition offsite of hazardous substances, or may otherwise be necessary to protect the public health or welfare; the term includes offsite transport and offsite storage, treatment, destruction, or secure disposition of hazardous substances and associated contaminated materials.

42 U.S.C. § 9601(24) (Supp. V 1987).

Removal actions are primarily those intended for short-term or interim responses, and remedial actions are generally considered long-term or permanent remedies. *City of New York v. Exxon Corp.*, 633 F.Supp. 609, 614 (S.D.N.Y.1986).

The act authorizes organizations of private parties to assist or conduct site response activities by:

(1) Organizing responsible parties;

(2) Initiating negotiation or other cooperative efforts;

(3) Apportioning costs among liable parties;

(4) Recommending appropriate settlements to the lead agency;

(5) Conducting the RI/FS in accordance with this Plan;

(6) Evaluating and recommending appropriate remedies to the lead agency;

(7) Implementing and overseeing response actions;

(8) Obtaining assurances for continued site maintenance from responsible parties; and/or

(9) Recommending sites for deletion after completion of all appropriate response action.

40 CFR § 300.71(b) (1989).

For purposes of cost recovery under section 107 of CERCLA, a response action is consistent with the NCP if the person taking the response action:

(i) Where the action is a removal action, acts in circumstances warranting removal and implements removal action consistent with § 300.65.

(ii) Where the action is a remedial action:

(A) Provides for appropriate site investigation and analysis of remedial alternatives as required under § 300.68;

(B) Complies with the provisions of paragraphs (e) through (i) of § 300.68;

(C) Selects a cost-effective response; and

(D) Provides an opportunity for appropriate public comment concerning the selection of a remedial action . . . .

40 C.F.R. § 300.71(a)(2)(i) & (ii) (1989).

By provisions of section 104 of CERCLA, the President may allow a potentially responsible party to carry out a remedial action, conduct the remedial investigation, or conduct a feasibility study, if the President decides the job can be done properly by the PRP. *Allied Corp. v. Acme Solvents Reclaiming, Inc.*, 691 F.Supp. 1100, 1109 (N.D.Ill.1988). However, where the President or a delegate has "initiated a remedial investigation and feasibility study for a particular facility under [CERCLA], no potentially responsible party may undertake any remedial action at the facility unless such remedial action has been authorized by the President." 42 U.S.C. § 9622(e)(6) (Supp. V 1987).

If, notwithstanding the EPA's involvement with a site, "a PRP undertakes a remedial action, its action will be deemed inconsistent with the NCP." *Acme Solvents Reclaiming,* 691 F.Supp. at 1109. "However, if the EPA 'authorizes' the remedial action, the action will not (if otherwise consistent) be inconsistent with the NCP." *Id.* "Passive acquiescence" by the EPA does not constitute sufficient authorization. *Id.* "Surely Congress did not intend under Section 122(e)(6) that, once the EPA initiates a remedial investigation and feasibility study, PRP's are free to undertake their own chosen form of remedy and then recover costs in federal court . . . ." *Id.* at 1110.

Attorneys fees and costs of litigation are not recoverable by a private litigant under CERCLA. *T & E Indus.,* 680 F.Supp. 696, 707 (D.N.J.1988). Whereas section 104(b) of CERCLA provides for the recovery of attorney fees and litigation costs by the United States, no analogous portion of the statute entitles a private party to recover for legal action taken. *Id.* at 708; *Northeastern Pharmaceutical & Chem. Co.,* 579 F.Supp. at 851. While private parties "may bring an action for recovery of response costs, they may not bring an action to enforce CERCLA's clean-up provisions against another private entity. Thus, private parties do not incur 'enforcement costs' as contemplated by CERCLA." *T & E Indus.,* 680 F.Supp. at 708 n. 13.

If tasks are performed to assist counsel in their defense of the litigation, "the Court is not aware of any authority which would enable those parties to recover such costs as response costs." *United States v. Conservation Chem. Co.,* 628 F.Supp. 391, 406 (W.D.Mo.1985).

2. Recoupment

The doctrine of recoupment "permit[s] a transaction which is made the subject of [a] suit by a plaintiff to be examined in all its aspects, and [a] judgment to be ren-

dered that does justice in view of the one transaction as a whole." *Rothensies v. Elec. Storage Battery Co.*, 329 U.S. 296, 299, 67 S.Ct. 271, 272, 91 L.Ed. 296 (1946). The three criteria for a recoupment counterclaim are: (1) it must arise out of the same transaction or occurrence that is the subject of the government's suit; (2) it must seek relief of the same kind or nature as that sought by the government; and (3) it must be purely defensive, *i.e.*, it must seek only to defeat the government's claim and not seek an affirmative recovery of damages. *Frederick v. United States*, 386 F.2d 481, 488 (5th Cir. 1967); *United States v. Yonkers Bd. of Educ.*, 594 F. Supp. 466, 469 (S.D.N.Y.1984). *See generally* 6 C. Wright, A. Miller & M. Kane, *Federal Practice and Procedure* § 1427 (2d ed. 1990). According to the standards applied in the Tenth Circuit, the elements of a claim for recoupment are:

> [W]hen the sovereign sues it waives immunity as to claims of the defendant which arrest matters in recoupment—arising out of the same transaction or occurrence which is the subject matter of the government's suit, and to the extent of defeating the government's claim but not to the extent of a judgment against the government which is affirmative . . . but the sovereign does not waive immunity as to claims which do not meet the "same transaction or occurrence test" nor to claims of a different form or nature than that sought by it as plaintiff nor to claims exceeding in amount that sought by it as plaintiff.

Frederick, 386 F.2d at 488 (footnotes omitted); *cited in Jicarilla Apache Tribe v. Andrus*, 687 F.2d 1324, 1344 (10th Cir.1982).

3. Equity Under CERCLA

Section 106(a) of CERCLA provides the Court with jurisdiction to "grant such relief as the public interest and the equities of the case may require." 42 U.S.C. § 9606

(a) (1982). In fashioning the remedy and apportioning responsibility among the parties in this case, the Court is guided by the "equities of the case." *United States v. A & F Materials Co.*, 578 F.Supp. 1249, 1259 (S.D.Ill. 1984). The HSC urges the Court to consider all of the facts concerning the Hardage Site in arriving at a fair, just, and lawful outcome of this case.

G. *Findings of Fact—HSC Response Costs*

1. During the years the Hardage Site was operated as a toxic waste disposal site, from 1972 to 1980, the OSDH and the Oklahoma City-County Health Department inspected the Hardage Site on at least 24 separate occasions. Supplemental Joint Statement para. 57, at 14-30.

2. These inspectors reported widely varying conditions, with problems initially centered around pits filled to capacity ~~and the potential~~ for overflow. DE 10 at 3.1.

3. In 1974, with funding from the National Science Foundation, students from the University of Oklahoma made a site investigation of contaminated soils and water within the Hardage permit area. Results from their investigations indicated chrome contamination of the soils north of the main pit area at the Hardage Site. GE 216 at 1-4.

4. In 1976, the OSDH requested that Mr. Hardage install groundwater monitoring wells in the southwest drainage. The wells were originally four inches in diameter. Eventually, the operator installed 13 wells. DE 10 at 3.1; GE 216 at 1-5.

5. Following the installation of the groundwater monitoring wells, the OSDH sampled these wells on 12 different occasions between August 13, 1976, and August 16, 1982. Supplemental Joint Statement para. 57, at 14-22.

6. In addition, the OSDH also collected surface water samples on seven occasions, took soil and sediment sam-

ples seven different times, tested water wells around the Hardage Site on 11 occasions, and tested tap water from farms in the vicinity on 10 occasions. In addition, the OSDH collected raw milk samples from an adjacent dairy on one occasion. Supplemental Joint Statement para. 57.

7. In February of 1980, Tim Baker, a groundwater geologist, and Kenneth Burns, an environmental program specialist, both of the OSDH Industrial and Solid Waste Service, issued their preliminary report into the contamination of the water supplies in the Criner Area, concluding:

> 3. Soil samples taken have shown contaminated material is being transported from the disposal site by runoff which is not adequately contained on the site.
>
> 4. The contaminated material is being deposited in the Alluvium of North Criner Creek which does create potentially hazardous conditions for water supplies in this area.

DE 121 at 1.

8. Investigations of the Hardage Site by the EPA began in 1979 and included the following samplings and inspections:

(a) *February and March 1979.* "EPA sampled milk, fish, tap water, surface water, and liquids at the site." Supplemental Joint Statement para. 57.32, at 17.

(b) *June 27, 1979.* Ralph Harkins of EPA Region VI, accompanied by Donald A. Hensch, director, Industrial Waste Division, H.A. Caves, chief of industrial and solid waste service, Jim Rolin, fish and wildlife ranger, Jerry Miller, county sanitarian, and a television news crew from KWTV, Channel 9 in Oklahoma City, inspected the asbestos disposal at the Hardage Site. Supplemental Joint Statement para. 57.36, at 17; DE 10 app. A.

(c) *August 15, 1979.* EPA and Oklahoma State Department of Health personnel obtained nine soil, water, and waste samples and inspected the site. The samples were analyzed for metals and organics, and photos were taken. DE 10 app. A; Supplemental Joint Statement para. 57.40, at 18.

A water sample from the interceptor trench was analyzed and several organic pollutants were identified, including .009 mg/l of 1,1,1-tri-chloroethane. GE 217 vol. I, at 3-3.

(d) *August 14, 1980.* Thomas Smith of Ecology & Environment performed off-site sampling for the EPA. Three samples were taken from off-site drainage pathways, which were analyzed for metals and organics. DE 10 app. A; Supplemental Joint Statement para. 57.59. Phenols, chlorinated pesticides, and PCB's were detected in these samples. GE 217 vol. I, at 3-3.

(e) *October 1, 1980.* Thirteen off-site samples were taken from off-site drainage and domestic water wells and analyzed for metals and organics, and photos were taken. DE 10 app. A; Supplemental Joint Statement para. 57.62, at 20.

Three sediment samples indicated total phenols of <0.3 mg/kg and lead ranging from 6.3 to 25.2 mg/kg. GE 217 vol. I, at 3-3.

(f) *June 1981.* A draft interim report concerning the Hardage Site was submitted to EPA by Dames & Moore. This report summarized the site activities and conditions. This report indicated sediment contamination from the ponds on the southwest part of the site and from the borrow ditch on the southern boundary of the property. GE 217 vol. 1, at 3-4.

(g) *March 23-April 18, 1982.* Imre Sekelyhide and other FIT employees conducted detailed on- and off-site sampling of the Hardage Site. Twenty-nine samples were collected between March 23-24, 1982; six domestic wells

were sampled from March 23-24, 1982. Ten monitoring wells were drilled by Sheperd Testing and Engineering Co. of Norman under the direction of Jerry Thornhill, a hydrogeologist at the EPA's Ada branch, between March 30 and April 2, 1982. Soil borings and monitoring well samples were collected from each new monitoring well. DE 10 app. A; Supplemental Joint Statement para. 57.78, at 21.

Variable concentrations of phenols, 1,1,1-trichloroethane, methylene chloride, and benzene were observed in all of the EPA monitoring wells. Extensive testing of Corley's domestic well occurred in 1982. Reported concentrations of 1,1,1-trichloroethane ranged from .0001 to .0127 mg/l, and benzene concentration ranged from less than .0002 to .0021 mg/l. GES 217 vol. I, at 3-10.

(h) *August 16, 1982.* Ecology & Environment (FIT) performed a second sampling of 10 groundwater samples for the wells drilled by FIT in March 1982. DE 10 app. A.

9. In 1979, EPA inspections of the Hardage Site indicated poor waste management practices posing potential threats to the public health and welfare and the environment. DE 10 at 11.1.

10. On September 8, 1980, the DOJ filed suit in *Hardage I*, on behalf of the EPA against the Hardage Site owner pursuant to section 7003 of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. § 6973. DE 10 at 11.1. In June 1982, the EPA and the DOJ amended the complaint to include allegations of violations and requests for relief under sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 & 9607.

11. On December 13, 1982, Judge West of this district entered findings of fact and conclusions of law in *Hardage I*. The Court found contamination of soil and groundwater at the Hardage Site as well as releases of contaminants into the air. The Court's Order concluded

the Hardage Site was dangerous and found Mr. Hardage individually liable for remedial action. *Id.*

12. The EPA continued to study the Hardage Site. During 1983 and 1984 the EPA conducted the following studies:

(a) A site investigation conducted for the EPA by Douglas Kent in 1983, which included an electrical resistivity survey of the North Criner Creek alluvium, construction of outcrop stratigraphic sections, fracture measurements, and a laboratory hydraulic conductivity test. Supplemental Joint Statement para. 57.92, at 22.

(b) A site investigation conducted by CH2M Hill for the EPA in 1984 which included: drilling 20 borings and completing 19 as pvc-cased monitoring wells; sampling surface water, ground water, source areas, and test pits; conducting a magnetometer survey and boring study of source areas in the main pit and sludge mound; and conducting bedrock packer and geotechnical tests. Supplemental Joint Statement para. 57.104, at 23.

13. Subsequent to the site closure, several organic chemicals disposed of on-site were found in local drinking water supplies downgradient from the site. These chemicals included: 1,1 dichloroethylene, 1,1,2 trichloroethane, tri-chloroethylene, tetrachloroethylene, and is (2-chlorethyl) ether, which are suspected carcinogens, and 1,2 dichloroethylene and 1,1 dichlorethane, which are EPA Hazardous Wastes and Priority Toxic Pollutants. GE 217 vol. I, at 1-9 to 1-10.

14. In addition, the EPA compiled available records from the site operations including daily and monthly site logs of wastes received, waste manifects, and disposal plans and records filed with the State of Oklahoma by generators and transporters of waste to the site. DE 10 at 11.2.

15. As a result of the compilation of these records, numerous PRPs were identified. DE 10 at 11.2.

16. These records revealed that in all, between 18 million and 20 million gallons of waste were disposed of at the Hardage Site. DE 10 at 2.0.

17. The records also revealed that the general types of waste accepted at the Hardage Site included: oil recycling wastes, acids, caustics, lead, chromium, cyanide, arsenic, pesticides, and PCBs. DE 10 at 3.2.

18. The EPA determined the contaminants that posed an immediate threat through the groundwater were chlorinated solvents, including: 1,2-dichloroethane, 1,1,2-trichloroethane, 1,1-dichloroethene, tetrachloroethene, and trichloroethene. The EPA also determined that other compounds such as lead, chromium, PCBs, and toxaphene were present on the site and would pose long-term or permanent hazards due to their persistence in the environment. DE 10 at 3.2.

19. On January 3, 1983, CH2M Hill, the EPA's contractor at the Hardage Site, released its Draft Feasibility Study Work Plan. Supplemental Joint Statement para. 57.97, at 23.

20. On January 26, 1983, Joan K. Leavitt of the OSDH "requested assistance from the EPA to conduct remedial response action at the Hardage Site." Supplemental Joint Statement para. 57.98, at 23.

21. On July 18, 1983, CH2M Hill completed a draft work plan and statement of work for a feasibility study for the Hardage Site. Supplemental Joint Statement para. 57.100, at 23.

22. Pursuant to the CH2M Hill Feasibility Study Work Plan, CH2M Hill conducted additional testing of the Hardage Site and accumulated the results of all of the above listed tests and inspections that had been conducted by the OSDH, the EPA, and others. The results of the data accumulation and testing summaries are found in CH2M Hill's Field Investigation and Data Summary Report. GE 217.

23. CH2M Hill issued its Field Investigation and Data Summary Report on the Royal Hardage Industrial Hazardous Waste Site in May 1985. GE 217.

24. The NCP directs the EPA to perform a "remedial investigation/feasibility study" ("RI/FS"), as appropriate. 40 CFR § 300.68(d) (1989), DE 10 app. C, at C-19.

25. Based upon the already extensive data compiled on the site, the EPA determined that a discrete remedial investigation of the Hardage Site was not appropriate. DE 10 app. C, at C-19. The EPA believed the aggregate of prior studies and data on the Hardage Site, when combined with the CH2M Hill Field Investigation and Data Summary Report, would in fact constitute a record of substantial equivalence to a discrete Remedial Investigation. Therefore, the EPA decided to move directly to the Feasibility Study requirement of CERCLA. DE 10 app. C, at C-20; 40 CFR 300.68 (1989).

26. At the time the Feasibility Study was committed by the EPA for the Hardage Site, the EPA enforcement policy documents, which recommended participation of PRPs in the RI/FS where appropriate, had not been promulgated by the EPA. In addition, the EPA had not yet completed the search for PRPs. For this reason, PRPs were not involved in the Feasibility Study from the outset. DE 10 app. C, at C-38.

27. On or about December 12, 1984, the EPA notified numerous companies, pursuant to section 104 of CERCLA, 42 U.S.C. § 9604, of their status as PRPs pursuant to section 107 of CERCLA, 42 U.S.C. § 9607. Supplemental Joint Statement para. 64, at 31.

28. The EPA also decided to divide the feasibility study process into two phases, or operable units—"source control" and "groundwater/offsite." DE 8 para. 2. The division was made based on technical information about the site and the criteria present in the NCP. As noted

in the Fea ibility Study, the EPA believed at the time the division was made, and continued to believe, that a substantial quantity of wastes remained in or near the original location and were not contained by adequate barriers, and that a remedy for source control would be cost-effecive and consistent with a permanent remedy at the site. DE 10 at C-16.

29. Beginning in September of 1985, the HSC began to try to convince the EPA that the HSC should assume control of a full RI/FS for the Hardage Site. DE 1. This offer was renewed by the HSC in October and December 1985, January 1986, and finally in March 1986. DE 2, 3 & 4.

30. These offers came when the EPA had already conducted its own investigations and was about to issue its own Feasibility Study on the Source Control Phase. GE 216.

31. The EPA saw no reason to revisit "that substantial part of [the] investigation and feasibility study already performed," and rejected the HSC's offer to perform a comprehensive RI/FS on the entire Hardage Site. DE 8.

32. On February 20, 1986, the EPA issued CH2M Hill's Feasibility Study Source Control on the Royal Hardage Industrial Hazardous Waste Site. GE 217.

33. The Court finds that given the volume of data that the EPA had accumulated as reported in its Field Investigation and Data Summary Report issued in May 1985, together with the fact that this Court had already determined in 1982 that the Hadage Site was dangerous and contaminated, the EPAs' decision to proceed to a feasibility study and to reject the HSC's request to do a comprehensive RI/FS for the Hardage Site was reasonable.

34. When the HSC was unsuccessful in convincing the EPA that the HSC should conduct a full RI/FS, it

contracted with ERM-Southwest on March 27, 1986, to critique the feasibility study done by the EPA. GE 281-C at 2-2. Five working days later, a draft report was transmitted to the HSC. On April 11, 1986, just 15 days after being hired, ERM-Southwest issued its Review and Critique—Source Control Feasibility Study. DE 122.

35. Early on, the HSC seized on the remedy theory and litigation strategy it was going to pursue. On May 15, 1986, ERM-Southwest issued its "Proposal for Studies to Determine the Feasibility of an In-Place Closure". GE 281-C. The intent of the study was to address *only* the feasibility of the in-place closure. *Id.* at 3-1. ERM concluded that legal action with the EPA might be necessary to overturn a non-technically based decision on EPA's part to choose incineration or some other inappropriate remedy. This report was attorney work product as shown in Government Exhibit No. 281-C.

36. Since the inception of this action, a substantial difference of opinion has existed between the EPA and the HSC as to what constitutes "adequate data." DE 10 app. C. In addition, a substantial difference of opinion has existed between the parties as to the amount of testing necessary to assess the dangers and conditions at the site.

37. The HSC presents a cost claim for HSC response costs in the amount of $9,530,984.72. DE-153 at p. 60 of 80. Included in HSC's claim are costs of performing interim remedial measures at the Hardage Site, together with the costs of site investigations, studies, tests, and data-gathering efforts at the Hardage Site. *Id.*

38. Subject to the reserved objections based upon the effect of the Consent Decree, the United States agrees the costs for the following HSC response activities are acceptable: (a) security fence, (b) mound slope and site repairs, (c) alternative water supply, (d) well plugging, (e) access agreements, and (f) site maintenance. Comments of U.S. on HSC Defendants' Summary of

Claimed Response Costs (Dec. 13, 1988) filing No. 2308).

39. The HSC performed the following response actions at the Hardage Site under CERCLA to protect the health and welfare of the nearby residents and the environment, consistent with the NCP:

(a) Constructed and maintained a security fence around the Hardage Site in accordance with the Stipulation Regarding Installation of a Fence at the Hardage Site, dated April 29, 1987. Schmittle Decl. at D-38; Costello Decl. at D-5; X at 1908; Supplemental Joint Statement paras. 120, 121 & 123.

(b) Performed interim repairs of the soil cover over the barrel mound, pursuant to the Stipulation Regarding Interim Repair and Maintenance of the Hardage Site Source Area, dated February 2, 1988 ("Repair Stipulation"). Supplemental Joint Statement paras. 126, 128 & 129.

(c) Constructed a water line and provided an alternative water supply to nearby residents. Supplemental Joint Statement paras. 124 & 125.

(d) Plugged several damaged EPA wells and several large open boreholes to prevent actual or potential movement of affected groundwater to lower, unaffected areas. The EPA approved these activities. Costello Decl. at D-5; X at 1908-9; Schmittle Decl. at D-39.

(e) Entered into access agreements with local landowners in order to undertake interim remedial measures and to investigate conditions at the Hardage Site. Costello Decl. at D-6; X at 1909.

(f) Performed maintenance as necessary to ensure the safety of personnel working at the site and to control erosion. Costello Decl. at D-6; X at 1909.

40. The HSC defendants incurred the following necessary costs of response that are consistent with the NCP:

(a) Interim remedial measures:	
(1) Security fence	$104,385.52
(2) Barrel mound repair	107,985.76
(3) Alternative water supply	122,190.30
(4) Plugging of wells	126,835.05
(b) Access agreements	14,600.00
(c) Site maintenance	20,698.63

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41. In addition, the HSC conducted extensive site investigations, studies, tests, and data gathering efforts at the Hardage Site. Supplemental Joint Statement para. 133, at 38.

42. The bedrock studies and expert panel field investigations identified in the HSC cost claim were performed solely to support the HSC's litigation position, *i.e.*, that a relatively inexpensive in-place containment remedy for the Hardage Site would be appropriate. X at 1942-45, 1973-80; Jewett R.Aff. at 6-7; Robertson R.Aff. at 2; GE 281-C at 1-1, 2-6; DE 122. The HSC's expert opinion on the necessity of such studies was limited to that which was necessary to support the HSC's preferred remedy. X at 1941-42. The expert panel field investigations were necessary only because the final confirmatory bedrock study failed to establish conclusively that the HSC's preferred in-place containment remedy would work. X at 1944.

43. The bedrock studies and expert panel field work were performed entirely at the direction of the HSC's litigation counsel. X at 1980-90, 1993-97. The evidence also showed:

(a) Litigation counsel was closely involved in the day-to-day design and implementation of the bedrock studies. X at 1980.

(b) During the bedrock studies, HSC's contractor ERM-Southwest worked "for the lawyers such that any

work we did was the result of instructions from litigation counsel." X at 1981.

(c) Litigation counsel was heavily involved in technical decisions on testing such as: (1) directing the number and orientation of borings, (2) the decision not to complete a monitoring well or perform packer tests at boring B-13, and (3) the decision not to perform packer tests at DH-1. X at 1984-89, 2026.

(d) The timing of the final confirmatory bedrock study was motivated by the HSC's desire to present its first remedy to the Court. X at 1942.

(e) The HSC's counsel admitted the expert panel field work by ERM-Southwest was "strictly litigation-oriented." X at 1994.

(f) ERM-Southwest described the expert panel field work as litigation support. X at 1997; GE 281-G.

44. The HSC presented no authority authorizing costs of "EPA oversight" as private party response costs. Activities involving EPA oversight were designed to enhance the HSC's litigation efforts by casting doubt on the efficiency of the EPA's efforts. *See* Costello Decl. at D-10; X at 1910. The defendants' EPA oversight expenses are duplicative, unnecessary, and not consistent with the NCP.

45. The barrel mound characterization studies were conducted contemporaneously with the expert panel field work, and like that work, were deemed "strictly litigation-oriented" by HSC counsel. X at 1994; Jewett R.Aff. at 6-7; Robertson R.Aff. at 2. An HSC witness, Mr. Bost, acknowledged the barrel mound studies were performed at least in part at the request of litigation counsel and in preparation for trial, yet the HSC presented no evidence demonstrating it had attempted to separate litigation related activities from nonlitigation activities.

46. The HSC presented no evidence to show whether the drummed sampling waste disposed of was collected during the HSC, EPA, or other sampling activities. Ac-

cordingly, the HSC failed to meet its burden of proof that the costs of "drum disposal" were "necessary" recoverable response costs within the meaning of section 107 of CERCLA.

47. The design of the HSC's proposed "remedial design" constituted a litigation-related activity because:

(a) IT Corp., the principal contractor for the remedy design work, described its work for the HSC as "[t]rial remedy basis design." X at 1938-40; GE 281-L & 286.

(b) IT Corp.'s contract was with HSC's litigation counsel. X at 1938-40; GE 286.

(c) IT Corp.'s contract with HSC's litigation counsel required IT to submit all reports in draft form to litigation counsel for review and approval. GE 286.

(d) This contract called for IT to develop a "trial remedy design." GE 286.

48. The HSC presented insufficient evidence to prove that the costs of its hydrological/hydrogeological studies are recoverable response costs because they, too, were designed to seek support for the HSC's preferred in-place containment remedy. X at 1942-43.

49. The HSC performed a Remedial Investigation/Feasibility Study (RI/FS) for the second operable unit pursuant to a Partial Consent Decree entered by the Court. The RI/FS evaluated alternatives for any appropriate actions necessary to address the second operable unit, management of migration. Supplemental Joint Statement paras. 130, 131 & 132. The total cost requested by the HSC in connection with the RI/FS was $4,184,142.08.

50. Certain portions of the cost of the second operable unit RI/FS are excluded because:

(a) ERM invoices in the amount of $200,000 that appear in the HSC's cost claim are not recorded in ERM's internal summary of the second operable unit RI/FS costs. X at 1921-22; GE 281-P.

(b) The second draft RI/FS activities submitted by the HSC to the EPA were not requested by the EPA. X at 1919; DE 14.

(c) Meta-Trace invoices in the amount of $200,282.68 involved work for the first operable unit RI/FS. X at 1923.

(d) Invoices totaling $50,000 involve chain of custody litigation support. GE 281-P.

(e) Costs for other work performed for litigation activities included $69,127.93 for monthly progress reports and project coordination, and $40,137.07 for HSC RI/FS review meetings. GE 281-P.

51. An HSC witness, Mr. Bost, conceded that the second operable unit work included litigation-oriented activities. X at 1998-99; GE 281-H.

52. On the basis of the unproved costs, the HSC cost claim for second operable unit RI/FS should be reduced to $3,220,000. United States' Comments on HSC Summary of Claimed Response costs.

53. ERM-related claims represent more than $7 million of the $9.5 million response cost claim of the HSC. X at 1969. ERM's representative, Mr. Bost, twice described ERM's client as the law firm of McKinney, Stringer & Webster and not the HSC. The contract between the HSC and ERM provides that the work performed will be utilized "for Counsel's preparation for existing litigation" and that all such work shall be deemed "confidential and privileged." GE 285 at 2.

54. Mr. Costello's general opinion that direct litigation costs were removed from the HSC cost claim (X at 1925-27) is contradicted by:

(a) The inclusion in the cost claim of numerous invoices for services, including those from Mr. Costello's company, which contain charges for services such as "liti-

gation" or "depositions." X at 1931-35; GE 281-K, 281-Q; McGeehin R.Decl. at 5.

(b) The inclusion in the cost claim of entire categories of expenses that were designed solely to bolster the HSC's litigation position, as set out in the above findings.

(c) Mr. Costello's and Mr. Matunas' testimony that the decisions regarding what costs to include and exclude in the cost claim—including what costs were litigation-related—were made by the HSC's litigation counsel. X at 1871-76, 1915.

55. The opinions of Mr. Costello and Mr. Bost that the costs claimed by the HSC in its cost summary are reasonable and necessary in order to protect the public health and welfare and to monitor, assess, and evaluate conditions at the site (Costello Decl. at B-1; Bost Decl. at D-4) were disproved by:

(a) Mr. Costello's refusal to testify as to what types of costs might be "necessary," as that term is defined in CERCLA. X at 1941.

(b) the fact that Mr. Costello reviewed and passed judgment on his own company's cost figures as well as those of others. X at 1926-28, 1930-33.

(c) Mr. Costello's concession that expenses, including a dinner, that do not meet the criteria set out in CERCLA are included in the cost claim. X at 1949-53; GE 281-M, 281-N, 281-O. Mr. Costello also included in the HSC response cost request a dinner he had with HSC lawyer Coldiron. GE 281-M. Mr. Costello also included a dinner in Chicago for the expert panel members that cost $1,000. GE 281-O. Mr. Costello claimed this expense actually represented the charge for a meeting room in addition to a meal. X at 1959. However, the charge receipt for the dinner contains a straight 15% tip on the entire amount, as would most meals (GE 281-O), and

the invoice has other charges explicitly listed as "meeting charges." GE 281-N at 3.

(d) Mr. Costello's clarification that, in rendering his opinion that the HSC's costs were necessary costs of response, he ignored the statutory standard and included all costs incurred as "normal costs of business." X at 1950.

(e) The rebuttal testimony of Dr. Brown, Mr. Jewett, and Mr. Robertson that many of the claimed costs were in fact unnecessary or otherwise improper. Brown R.Aff. at 3, 8-9; Jewett R.Aff. at 6-7; Robertson R.Aff. at 2-4.

(f) The findings set out above indicating that the cost claim contains a substantial amount of costs related solely to litigation.

(g) Other examples of improper costs for such extravagant meals appear in other invoices introduced into evidence. GE 281-Q at 2.

56. The volume of site investigations, tests, studies, and samples performed by the HSC was necessary only to support the HSC's litigation position concerning an in-place containment remedy.

H. *Conclusions of Law—HSC Response Costs*

1. The HSC costs of a security fence, mound slope and site repairs, alternative water supply, well plugging, access agreements, and site maintenance are "necessary costs of response . . . consistent with the national contingency plan." 42 U.S.C. § 9607(a)(4)(B) (Supp. V 1987).

2. The HSC failed to meet its burden of demonstrating that its claim for the cost of bedrock studies, expert panel field investigation, oversight of EPA work, mound characterization studies, drum disposal, remedial design, and hydrological/hydrogeological studies are "necessary costs

of response . . . consistent with the national contingency plan." 42 U.S.C. § 9607(a)(4)(B) (Supp. V 1987).

3. Only $3,220,000 of the HSC's costs of the second operable unit RI/FS are "necessary costs of response . . . consistent with the national contingency plan." 42 U.S.C. § 9607(a)(4)(B) (Supp. V 1987).

4. Costs borne primarily to support the HSC's litigation position are not "necessary costs of response . . . consistent with the national contingency plan." 42 U.S.C. 9607(a)(4)(B) (Supp. V 1987); *United States v. Conservation Chem. Co.*, 628 F.Supp. 391, 406 (W.D.Mo. 1985).

5. Approval by the EPA is necessary for remedial actions only. 42 U.S.C. § 9622(e)(6) (Supp. V. 1987); *Versatile Metals, Inc. v. Union Corp.*, 693 F.Supp. 1563, 1575-76.

6. The necessary costs of response incurred by the HSC totaled $3,716,695.23.

7. The United States is liable for only 8.36% of the awarded HSC response costs. 42 U.S.C. § 9607(a)(4)(B) (Supp. V 1987).

8. The United States is not liable for prejudgment interest on any HSC response costs.

9. The United States is liable for 8.36% of the future response costs, if any, incurred by the HSC defendants that are approved by the Court pursuant to section 107(a)(4)(B) of CERCLA, 42 U.S.C. § 9607(a)(4)(B).

10. The United States is liable for 8.36% of the EPA response costs, past and future, incurred by the United States.

I. *Findings of Fact—Recoupment Counterclaim*

1. The HSC failed to demonstrate that the conditions at the Hardage Site would have been mitigated if the

OSDH remedy had been implemented. The OSDH remedy was not a permanent remedy. An HSC witness, Dr. Cherry, conceded that groundwater, as well as surface flow, serves as a pathway of containment migration from the source areas. XI at 2121, 2128; VIII at 1612.

2. The United States' action arises primarily out of the disposal and subsequent release of hazardous substances from the Hardage Site from 1972 through 1980. Complaint para. 6, at 3.

3. The HSC's counterclaim for recoupment purports to be based on alleged negligance by the EPA in connection with its remediation of the site after 1980.

4. The EPA's alleged negligence did not arise from the same transaction as the disposal of waste at the Hardage Site.

5. The HSC's claim arises from different conduct, was committed by different parties, and arose over different periods of time than those involved in the United States' case-in-chief.

J. *Conclusions of Law—Recoupment Counterclaim*

1. The United States has "no affirmative duty to consult with [the] parties before undertaking [CERCLA] response actions." *United States v. Mottolo,* 695 F.Supp. 615, 628 (D.N.H.1988).

2. The HSC failed to show a nexus between the relief sought by the United States and the transactions or occurrences the HSC's recoupment counterclaim asserts. *United States v. 2,116 Boxes of Boned Beef,* 726 F.2d 1481, 1490-91 (10th Cir.1984). Specifically, the HSC failed to demonstrate that it is entitled to any recoupment because of the EPA's cleanup activities at the Hardage Site.

K. *Findings of Fact—Equities of the Case*

1. Of the 20 million gallons disposed of at the Hardage Site, the United States and its various agencies arranged for disposal or treatment of approximately 920,000 gallons or 4.6% of the waste at the Hardage Site. Supplemental Joint Statement para. 49, at 13.

2. The HSC has presented no evidentiary basis for assessing the United States for 50% of the costs of the remedy at the Hardage Site.

3. The federal share of liability at the Hardage Site should be allocated on the basis of the United States' contribution to the site.

4. The federal share of liability at the Hardage Site is 8.36%. This figure is determined by taking 920,000 of the total 11 million gallons generated by the remaining financially viable parties (thus excluding "orphan shares" from the total waste). Supplemental Joint Statement paras. 48-51.

5. The United States is liable for 8.36% of the costs of the remedy ordered at this site.

L. *Conclusions of Law*

1. The United States' portion of the remedy at the Hardage Site is 8.36% of the costs of the remedy ordered at this site. 42 U.S.C. § 9606(a).

2. This resolves the United States' liability in this lawsuit.

M. *Conclusion*

For the reasons set forth above, the HSC is awarded a total of $3,716,695.23 in response costs. The United States is liable for only 8.36% of the HSC response costs. The United States is liable for only 8.36% of the remedy ordered for this site. This Order resolves all of the United States' liability in this lawsuit.

XII. ADDITIONAL FINDINGS OF FACT AND CONCLUSIONS OF LAW

1. Under the circumstances in this case the remedy is ordered pursuant to section 106(a) of CERCLA, 42 U.S.C. § 9606(a). The Court has held a trial *de novo* to determine the remedy that best protects the public health and welfare and the environment. See Order on Motion to Restrict Review (filed Sept. 9, 1988) (filing No. 1434), and attached rulings.

2. The administrative record offered by the EPA to support its proposed remedy is inadequate because:

(a) The remedy issues in this action cannot be resolved on the basis of an administrative record. *See id.*

(b) The Record of Decision dated November 22, 1989, supports a remedy that the government acknowledges is different than the remedy proposed in the Partial Consent Decree and different than the trial remedy described by the government's witnesses. Limiting review to the administrative record therefore would require rejection of the remedy proposed, and advocated at trial, by the United States.

3. The remedy proposed by the EPA, as described in its Remedy Report of October 13, 1989, and by the government's trial witnesses, would require significant, further design work before it could be implemented. The further design work could result in material changes to the remedy advocated at trial or could reveal that major components of the proposed remedy are infeasible or not cost effective. Indeed, the government's remedy has already undergone dramatic changes during the course of this litigation. The United States failed to prove by a preponderance of the evidence, and failed to persuade the Court on the trial record as a whole, that the EPA's preferred remedy is appropriate for the Hardage Site.

4. Had the Court limited its review of remedy selection issues to the EPA's administrative record, the Court would find that the EPA's selected remedy is arbitrary, capricious, and an abuse of discretion.

5. There would be no demonstrable benefit either to public health and welfare or to the environment from implementing the added components proposed as part of the EPA's remedy. The benefits claimed for those components are offset by the substantial risks associated with their implementation. Bost Decl. D-7 to -11; Cherry Decl. at D-22; Harris Decl. at C-40.

6. To the extent the NCP standards are applicable or may be considered by the Court, the HSC's proposed remedy best satisfies those standards.

7. The HSC's proposed remedy is based upon adequate data and analysis. *See* 40 C.F.R. § 300.68(i) (1989).

8. The HSC's proposed remedy is more cost-effective than the EPA's proposed remedy. *See* 40 C.F.R. §§ 300.68(g)(1), 300.68(i) (1989).

9. The HSC's proposed remedy as modified is "feasible for the location and conditions of the release," and presents "a reliable means of addressing the problem." 40 C.F.R. § 300.68(g)(2) (1989).

10. The HSC's proposed remedy as modified would not cause "significant adverse effects," while the EPA's remedy presents serious risks to workers, residents, passersby, and has limited environmental benefits. 40 C.F.R. § 300.68(g)(3) (1989).

11. The HSC's proposed remedy as modified will generate fewer vapor and dust emissions that will migrate off site, and therefore the HSC's proposed remedy will minimize the risks of future exposures remaining after implementation of the remedy. *See* 40 C.F.R. § 300.68(h)(2)(iv) (1989).

12. The HSC's proposed remedy as modified is the more cost-effective remedy that best "mitigates and minimizes threats to and provides adequate protection of public health and welfare and the environment." 40 C.F.R. § 300.68(i)(1) (1989).

13. The HSC's proposed remedy as modified "attains or exceeds applicable or relevant and appropriate Federal public health and environmental requirements that have been identified" for the site. 40 C.F.R. § 300.68(i)(1) (1989).

14. The EPA excavation remedy could lead to uncontrolled vapor emissions, or present such serious risks to workers that it would have to be halted. The HSC remedy components, which largely duplicate the portions of the EPA remedy other than excavation and soil vapor extraction, do not present similar risks of failure. The EPA remedy therefore carries with it a greater "potential for future remedial action costs if the alternative remedial action in question were to fail." CERCLA § 121(b)(1)(F), 42 U.S.C. § 9621(b)(1)(F) (Supp. V 1987).

15. The EPA's excavation remedy could lead to greater "potential threat[s] to human health and the environment associated with excavation, transportation, and redisposal, or containment" of wastes, toxic vapor emissions, and fugitive dust emissions than the HSC's proposed remedy. CERCLA § 121(b)(1)(G), 42 U.S.C. § 9621(b)(1)(G) (Supp. V 1987).

16. The State of Oklahoma opposes the EPA's proposed excavation remedy. The OSDH's support of the HSC's proposed remedy is a factor that weighs in favor of the HSC's remedy. *See* CERCLA § 121(f), 42 U.S.C. § 9621(f) (Supp. V 1987).

17. The HSC's proposed remedy as modified is more "cost effective" than the EPA's proposed remedy. It will achieve greater reduction of any risks that the site may present to the public health and welfare and the environ-

ment and will cost substantially less. *See* CERCLA § 121(a), (b)(1), 42 U.S.C. § 9621(a), (b)(1) (Supp. V 1987).

18. The HSC's proposed remedy as modified is more "relevant and appropriate under the circumstances presented" at the Hardage Site. CERCLA § 121(d)(1), 42 U.S.C. § 9621(d)(1) (Supp. V 1987). The EPA remedy, on the other hand, involves potentially dangerous excavation and waste handling activities and also involves the use of soil vapor extraction technology at a site that may not be well suited for that technology.

19. The closure plan proposed by the State of Oklahoma in 1982 was an "interim solution." In the Court's view, it would only "mitigate the problem . . . on the short-run." III at 597-99. The closure plan would not have been an adequate remedial action for the Hardage Site. V at 1155-56.

20. Both the EPA's proposed remedy and the HSC remedy as modified and adopted by the Court must be monitored in perpetuity. V at 1027.

21. The V-trench and southwest interceptor systems, as proposed by the EPA and the HSC, must be maintained and operated indefinitely. VIII at 1594-95.

22. Both the EPA remedy and the HSC remedy would require institutional controls to restrict access to affected ground water in the alluvium. V at 1180; III at 681.

23. Pursuant to: the Court's Judgment and Order of November 10, 1988; the Court's orders of May 23, 1990, and June 11, 1990, respectively, adjudging defendants CATO Oil and Grease Co., DalWorth Industries, Inc., Double Eagle Refining Co., J.O.C. Oil Exploration Co., Inc., Oklahoma National Stockyards Co., and Rockwell International Corp., jointly and severally liable for United States response costs; this Court's Order of May 28, 1990, finding Kerr-McGee Corp. and Kerr-McGee

Refining Corp., jointly and severally liable for United States response costs; this Court's Judgment of June 16, 1989, entering L & S Bearing Company's stipulation of liability for United States response costs; and this Court's Order adjudging defendant U.S. Pollution Control, Inc., jointly and severally liable for United States response costs, the following parties have been found to be jointly and severally liable for any injunctive relief ordered under section 106 of CERCLA, 42 U.S.C. § 9606, with respect to the Hardage Site, and for any judicial determination of the United States' costs ordered pursuant to section 107 of CERCLA, 42 U.S.C. § 9607, remaining after a determination of the extent of liability of the plaintiff under sections 106 and 107 of CERCLA:

AT & T Technologies, Inc.
Advance Chemical Distribution, Inc.
Allied-Signal, Inc.
Ashland Oil, Inc.
Atlantic Richfield Co.
Sam L. Bishkin, individually and d/b/a
Eltex Chemical and Supply Co.
Borg-Warner Corp.
CATO Oil and Grease Co.
Dal-Worth Industries, Inc.
Double Eagle Refining Co.
Exxon Corp.
Bridgestone/Firestone, Inc.
GenCorp, Inc.
Bull HN Information Systems, Inc.
J.O.C. Exploration Co., Inc.
Kerr-McGee Corp.
Kerr-McGee Refining Corp.
L & S Bearing Co.
Magnetic Peripherals, Inc.

Maremont Corp.
McDonnell Douglas Corp.
Mobil Chemical Co.
Nalco Chemical Co.
Oklahoma Gas & Electric Co.
Oklahoma Publishing Co.
Oklahoma National Stockyards Co.
Rockwell International Corp.
Texaco Refining and Marketing, Inc.
Texas Instruments, Incorporated
UOP, Inc.
The Uniroyal Goodrich Tire Co.
United States Pollution Control, Inc.
Westinghouse Electric Corp.
Weyerhaeuser Co.

24. The implementation of the remedy ordered for the Hardage Site will require access to and use of the Hardage Site and certain tracts of land near the Hardage Site. GE 2 at 3-109; III at 680-81; Bost Decl. at D-7; R. Davis R. Aff. sec. 3.34, at 15.

25. The defendants adjudged liable shall commence negotiations with the owners of nearby properties to acquire the easement interests and property tracts needed for the remedial action and institutional controls ordered to implement, operate, and maintain the Hardage Site remedy. If the property tracts or necessary easement interests cannot be acquired through negotiated agreement within 90 days from the date of this Order, the defendants shall apply to the Court for such relief as is necessary. The defendants are not required to acquire any property owned by Mr. Hardage.

26. The Hardage Site and the acquired easement and other property interests shall be dedicated solely to the remedial activities ordered by the Court, and as necessary shall be restricted for other purposes. Use restrictions on

the Hardage Site and other acquired property interests shall be recorded with the Recorder of Deeds of McClain County, Oklahoma, and shall run with the land, binding all successors in interest to these properties.

27. The Court began the preparation of this Order without utilizing transcripts from the trial of the case. As trial transcripts were examined by the Court following the trial of this matter, the Court found it helpful to include certain transcript citations in its findings. The citations to the record contained in this Order are intended only to be representative of the evidence in support of the finding. In preparing its findings, the Court relied on the record as a whole (including but not limited to the evidentiary citations contained in this Order), the Court's own notes and draft findings prepared during trial, and the parties' various proposed findings. In some instances the Court has included no evidentiary citations, reflecting the Court's recollection of the record as a whole.

28. Any finding of fact contained in this Order that should more properly be considered a conclusion of law shall be deemed a conclusion of law for purposes of this Order. Any conclusion of law contained in this Order that should more properly be considered a finding of fact shall be deemed a finding of fact for purposes of this Order.

XIII. CONCLUSION

For the reasons set forth above, the Court rejects the United States' proposed remedy for the Hardage Site and accepts the HSC defendants' proposed remedy, with the indicated modifications. A judgment consistent with this Order, approved as to form only by all counsel, is attached.

EXHIBIT A

ORDER

Filed Jan. 20, 1989

A. INTRODUCTION

On January 9, 1989, the Court conducted a hearing on defendants' motion to reconsider the Court's November 23, 1988 order permitting interlocutory appeal. For the reasons set forth on the record at the hearing, the Court withdrew its previous certification order, dated November 23, 1988, and entered a new order denying the government's September 14, 1988 motion to permit interlocutory appeal pursuant to 28 U.S.C. § 1292(b). *See* Minute Order issued January 11, 1989.

This case has had a lengthy history of litigation resulting in extensive discovery and numerous motions and other pleadings. When faced with a lengthy, complex trial such as this one, the Court has found it to be beneficial to require the parties to do some additional preparation for trial. Certain procedures used by the Court serve to streamline the issues and delete unnecessary presentation of evidence. Accordingly, no continuances or departures from the following schedule will be permitted.

B. FINAL WITNESS AND EXHIBIT LISTS

In addition to the witness and exhibit lists called for by this Court's previously issued scheduling order, plaintiff is to submit to defendants by 5:00 p.m. Monday, August 21, 1989 its final witness and exhibit list in this matter, setting forth those witnesses it *actually intends to call* in its case-in-chief in the *actual order of anticipated appearance.* The listing shall be filed with the Court on the same day. The listing shall be in conformance with the sample attached to this Order. This format also requires plaintiff to identify the specific exhibits to be intro-

duced or discussed in connection with each witness, whether the witness has been deposed, and a time estimate for the direct examination of each witness.[1]

The exhibits referenced in the list shall have been previously marked, identified, and made available to opposing counsel so that the exhibit number on the chart will sufficiently identify the exhibit for opposing counsel.

Any witnesses or exhibits which surface at the time of trial but which have not been identified or made available for deposition or inspection by opposing counsel during the discovery period *shall not* be permitted at trial.[2]

By September 4, 1989, defendants are to file and submit to plaintiff a similar witness and exhibit list for their case-in-chief.

Hostile witnesses called by either side in the cases-in-chief are partially exempted from this rule in that affidavits, as well as the complete listing of exhibits to be used in connection with such witnesses, are not required. The hostile witnesses must, however, be identified as hostile witnesses on the chart filed with the Court along with their anticipated order of appearance and time estimate of their examination, as well as the other items called for on the attached chart.

C. STIPULATION OF UNCONTESTED FACTS

The parties shall enter into a *comprehensive written stipulation of all uncontested facts* in such form that it

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[1] This time estimate should be the estimated time it would take for the direct examination of each witness *in the absence of* the affidavit procedure set forth in paragraphs E and F below.

[2] If any unnoticed witnesses or exhibits are identified on this list, counsel shall file an affidavit setting forth: (a) the reasons why the witness and/or exhibit was not previously noticed in accordance with the Scheduling Order; (b) the reasons why the evidence should be permitted at trial; and (c) the reasons why preclusionary and/or monetary sanctions should not be imposed.

can be introduced as the first evidence at the trial. The comprehensive stipulation should include all facts intended to be proved by either side which the other side is not going to dispute either by a controverting witness or by cross-examination. It should include preliminary or background facts, as well as ultimate facts if they are not disputed. It is suggested that counsel for plaintiff list all facts intended to be proved at trial including those assumed to be in dispute. Defense counsel can then delete those facts to be controverted and add any additional facts they intend to prove. Counsel for plaintiff can then delete any additional facts which will be controverted. This technique should result in a stipulation of all uncontested facts, as well as a list of all contested facts. The parties may utilize their contentions and their drafts of the final pretrial order as a starting point for this stipulation. The stipulation must, of course, be organized in some logical order so that it will be intelligible when read by the Court as the first trial evidence. If the admissibility of some uncontested fact is challenged, the objecting parties, and the grounds for objection, must be stated. This stipulation will be filed with the Court by August 11, 1989.

D. DEPOSITION PROCEDURE

As to all depositions which the parties expect to offer at the time of trial the following procedure is adopted. The parties will designate all depositions to be read into evidence and attempt to agree as to those portions to be read. It is suggested that a four-color system of designation be used. Plaintiff can use one color, *e.g.*, green, to designate portions it desires to read. Defendants can use a second color, *e.g.*, red, to indicate those portions designated by plaintiff to which defendants object, stating the grounds for the objections. A third color, *e.g.*, blue, can be used by defendants to designate any additional portions they desire to read, and plaintiff can use a fourth color, *e.g.*, brown, to indicate portions designated by defendants to which plaintiff objects, stating the grounds for the ob-

jections. The Court will rule in advance of their use at trial. The depositions will be filed with the Court by November 24, 1989.

E. EXPERT WITNESSES

On October 2, 1989, plaintiff and defendants will file affidavits of each of their respective expert witnesses, if any. The affidavits shall contain the following: (a) an identification and description of the specific areas or fields in which the witness will be tendered as an expert; (b) an identification and description of each exhibit which will be introduced or discussed in connection with the expert's testimony with respect to each such exhibit, with an appropriate evidentiary foundation supporting the introduction and/or discussion of each such exhibit; (c) a separate listing and summary of every opinion to be rendered by the expert during his or her testimony; (d) a separate listing of the basis for each opinion set forth in (c) above. The expert's curriculum vitae should be attached to the affidavit of the expert witness as an exhibit, and shall be in written form suitable for introduction into evidence. This vitae shall cover every item supporting the qualifications of the expert witness' testimony.

Because this is a non-jury trial, the expert witness affidavits and their attachments, subject to any proper objections, will be received in evidence as the *direct examination* of the experts at trial. The attorney sponsoring any expert witness will be given *no more than thirty (30) minutes* to highlight or emphasize any portions of the expert's testimony (though no new matters outside the affidavit may be raised absent a showing of just cause and compelling circumstances). The expert witness will then be tendered for cross examination.

Objections to any matters contained in the affidavits shall be filed by November 3, 1989. Affidavits of rebuttal witnesses, if any, shall be filed by November 10, 1989.

Objections to rebuttal affidavits shall be filed by November 20, 1989.

F. NON-EXPERT WITNESSES

On October 2, 1989, plaintiff and defendants will file affidavits of all their remaining witnesses to be called in their cases-in-chief, with the exception of hostile witnesses.

The affidavits shall be prepared in accordance with the requirements set forth in Section E above with respect to any exhibits to be introduced and/or discussed in connection with each witness, and shall set forth the entire proposed direct examination of the witness.

Subject to objections, the affidavits will be received in evidence as the direct examination of the witnesses at trial. The attorney sponsoring any non-expert witness on direct examination will be given *no more than fifteen (15) minutes* to hightlight or emphasize any portion of the witness' testimony under the procedure set forth in Section E above. The witness will then be tendered for cross examination.

Objections to any matters contained in the affidavits shall be filed November 3, 1989. Affidavits of rebuttal witnesses, if any, shall be filed by November 10, 1989. Objections to rebuttal affidavits shall be filed by November 20, 1989.

G. DISCOVERY CUTOFF

Discovery cutoff as to liability issues is May 15, 1989. As to other issues the discovery cutoff is August 1, 1989. The parties may conduct any additional discovery by agreement after those dates provided that any such discovery conducted after those dates will not be offered or submitted to the Court in connection with any dispositive motions filed.

All other deadlines established by this Court's previous scheduling order remain intact unless altered below.

H. DISPOSITIVE MOTIONS—PLAINTIFF AND DEFENDANTS

(1) *Liability Issues*

Dispositive motions shall be filed by June 1, 1989. Responses thereto shall be filed by June 30, 1989. Replies, if any, shall be filed by July 14, 1989.

(2) *Other Issues*

Dispositive motions shall be filed by September 1, 1989. Responses thereto shall be filed by September 29, 1989. Replies, if any, shall be filed by October 13, 1989.

Although the Court has permitted the parties to extend the previous discovery cutoff dates, this Court will *not* allow any agreed upon extensions of discovery to adversely impact the dispositive motion schedule set forth above. Had the Court not permitted the parties to extend discovery, the dispositive motion schedule set forth above would have been well after the termination of discovery. Accordingly, no extension of the dispositive motion schedule will be permitted based upon a claim that discovery is still ongoing. Similarly, the Court *will not* permit any dispositive motions to be supplemented by discovery conducted after the filing of dispositive motions and/or the responses.

I. DISPOSITIVE MOTIONS—THIRD-PARTY DEFENDANTS

The third-party defendants previously filed an application for an order permitting them to conduct limited discovery and to file dispositive motions prior to the trial of phase I and phase II issues. That application was denied by a short written order issued July 14, 1988. *See* docket sheet entry no. 1297.

The Court, however, has reconsidered the position of the third-party defendants and hereby modifies the July

14, 1988 order to permit limited discovery and the filing of dispositive motions prior to the November 27, 1989 remedy trial, for any third-party defendants who desire to do so. This is entirely optional.[3]

Those third-party defendants who desire to file dispositive motions prior to the remedy trial will adhere to the following schedule:

(1) From March 22 through April 28, 1989 the third-party defendants may conduct discovery relative to the dispositive motions.

(2) The dispositive motions shall be filed by May 19, 1989.

(3) From May 22 through June 29, 1989, third-party plaintiffs may conduct discovery relative to any dispositive motions which are filed.

(4) The responses to the dispositive motions shall be filed by July 14, 1989.

(5) Replies, if any, shall be filed by July 21, 1989.

(6) A hearing on any dispositive motions filed by Third-parties in accordance with this schedule will be held August 25, 1989 at 8:00 a.m.

J. SITE VISIT

The parties shall make appropriate arrangements for the Court and the Special Master to visit the Hardage disposal site on Monday, March 27, 1989.

K. SETTLEMENT CONFERENCE

A two-day settlement conference will be conducted April 26-27, 1989.

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[3] **Any third-party defendants who do not desire to file dispositive motions *prior* to the November 27, 1989 remedy trial will be given an opportunity to conduct discovery and file dispositive motions *after* the remedy trial.**

L. FINAL PRETRIAL ORDER, PRETRIAL STATUS CONFERENCE, OPENING STATEMENTS AND TRIAL

The trial is set on the Court's November 27, 1989 trial docket. The Final Pretrial Order shall be approved by all parties and submitted to the Court by November 17, 1989. A final pretrial conference will be held November 24, 1989 at 8:00 a.m. All proposed findings of fact, conclusions of law and trial briefs shall be filed by November 24, 1989. The parties may, if they desire, make opening statements on November 24, 1989. Given the submission of trial briefs and proposed findings, opening statements will be limited to thirty (30) minutes per side.

M. TOTAL AMOUNT OF TIME TO BE DEVOTED TO TRIAL

This case had been the subject of various and shifting trial estimates by the parties. On February 1, 1988, in the status report signed by counsel for all parties, and submitted to the Court, the parties made the following representation to the Court:

VII. ESTIMATED TRIAL TIME:

Phase II Remedy: 30 trial days

Status Report filed February 1, 1988.

In the briefs submitted to the Court of Appeals on the now-aborted petition for interlocutory appeal the defendants stated:

> The Government agreed in principle with the Defendants in late November of [1988] to propose a scheduling order that included a 52-day trial for the *entire* "remedy phase" of the case.

Opposition of Generator and Transporter Defendants-Respondents to Application of the United States to Per-

mit Interlocutory Appeal at 14, filed December 11, 1988, in *U.S.A. v. Hardage*, No. 88-8090 in the Tenth Circuit. *See also* Affidavit of Robert D. Tomlinson, attached as Exhibit A to the Memorandum in Support of Motion of Hardage Steering Committee Defendants for Reconsideration of Order Allowing Interlocutory Appeal, filed December 1, 1988 in this Court.

The government did not dispute that such an agreement had been reached.[4] Moreover, at the hearing on January 9, 1989, counsel for the government indicated that adoption of the procedures set forth in this order would cut the actual trial time by approximately one-half, and endorsed the affidavit, deposition and stipulation procedures outlined above. The parties' previous trial estimates assumed six (6) hours of trial every trial day, an estimate this Court exceeds on a regular basis.

The Court believes that it should be entitled to rely on the trial estimates the parties provided to the Court, and further believes that from the statements of the parties concerning the nature of their cases,[5] that much of the proffered evidence in this case is overlapping and duplicative. Accordingly, based on the previous representations of counsel, the Court has determined that it will allocate no more than thirty days to hear the *total trial* of this case. No departures from this total time period will be entertained or granted. This is the amount of time the parties previously told *this Court* it

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[4] *See* U.S. Memorandum in Response to Motion to Reconsider at 2, attached to U.S. Application to file Memorandum in Response, filed December 12, 1988. The government on January 9, 1989, however, attached certain caveats to the 52 day trial "agreement" it reached with defendants. These caveats, however, were not disclosed to the Court by counsel for any party when the parties estimated in February, 1988 that the entire remedy trial would take 30 trial days, nor were these caveats disclosed to the Court of Appeals in connection with the 52 day trial estimate.

[5] For example, both parties estimate that approximately two-thirds of their respective cases will be taken up by experts.

would take to try this case, and more time than necessary to try the case under the 52-day estimate provided to the Court of Appeals, when reduced by the procedures endorsed by the parties in this case.

The Court will, at a later date, issue further time restraints within the 30-day time period, to be determined after reviewing the submissions of the parties called for by this Order. For purposes of trial preparation *at this time*, however, counsel should assume that the government will be permitted 14-days to present its case-in-chief, the defense will be given 14-days to present its case-in-chief, the government will be given one day of rebuttal and the defense one day of sur-rebuttal. These limitations, of course, are subject to the Court's authority to curtail any evidentiary presentation upon proper objection.

Moreover, if it appears to the Court that any of the parties have taken unreasonable positions with respect to requiring proof of matters not in dispute, refusing to sign stipulations which eliminate unnecessary proof, or challenging the evidentiary foundation of exhibits or testimony without adequate basis, the Court reserves the right to add or subtract from any party's allocated evidentiary presentation, with the understanding that the total trial time of 30 days *will remain unchanged*. Given the fact that the government bears the burden of proof in this matter, the Court will not hesitate to reduce the defendants' evidentiary presentation if dilatory tactics are employed.

A typical trial day will begin at 8:45 a.m. and end at 5:15 p.m. There will be one hour and fifteen minutes for both lunch and the accommodation of other docket matters, as well as two twenty (20) minute breaks, one in the morning session and one in the afternoon session. Consistent with the parties' previous trial estimates, the parties are assured that there will be *at least* six (6) hours of trial on each of the thirty (30) trial days.

The time taken to argue all objections made by a party which are overruled by the Court shall be deducted from the objecting party's time. Time for objections which are sustained will be deducted from the time of the proponent of the evidence. Otherwise, the time spent in non-evidentiary presentations will be charged to the requesting party.

The total time devoted to cross examination of any witness will be limited to the time which would be necessary to present the witness' relevant and necessary direct examination in the absence of the affidavit procedure adopted by this Court. This determination will be made by the Court. If unusual circumstances require cross examination to exceed the time which would have been devoted to the relevant and necessary direct examination, as determined by the Court, the excess time will be charged to the cross examining party.

The parties are directed to confer each evening prior to the next day of trial and to jointly review the exhibits to be offered during the direct examination of the upcoming witnesses in an effort to eliminate, wherever possible, objections to the anticipated exhibits. The presentation of each witness should begin with an announcement of the exhibits which may be received in evidence without objection.

Fed.R.Evid. 403 recognizes the power and duty of the Court to exclude cumulative evidence or evidence which consumes more time than its probative value justifies. *See United States v. Algie,* 503 F.Supp. 783, 793 (E.D.Ky.1980), *rev'd on other grounds,* 667 F.2d 569 (6th Cir.1982). Rule 611 directs the Court to "exercise reasonable control over the mode and order of interrogating witnesses and presenting evidence, so as to (1) make the interrogation and presentation effective for the ascertainment of the truth, [and] (2) avoid needless consumption of time." In short, it is fundamental that a court has the power and duty to manage its docket and

the individual cases before it to "secure fairness in administration, [and] elimination of unjustifiable expense and delay." Fed.R.Evid. 102. As stated by the Court in *United States v. Reaves,* 636 F.Supp. 1575, 1578 (E.D.Ky.1986):

> There is an unnamed party in every lawsuit—the public . . . . The public's right to a "just, speedy, and inexpensive determination of every action" is infringed, if a court allows a case, civil or criminal, to preempt more than its reasonable share of the court's time.

The courts have discretion to place reasonable time limits on the presentation of evidence to prevent undue delay, waste of time, or needless presentation of cumulative evidence. *See Johnson v. Ashby,* 808 F.2d 676 (8th Cir.1987); *MCI Communications v. American Tel. & Tel. Co.,* 708 F.2d 1081, 1171 (7th Cir.1983). As stated by the court in *Flamingo v. Honda Motor Co., Ltd.,* 733 F.2d 463, 473 (7th Cir.1984): "[I]n this era of crowded district court dockets federal district court judges not only may but must exercise control over the length of trial . . . ." *See also United States v. Reaves,* 636 F.Supp. 1575 (E.D.Ky.1986); *SCM Corp. v. Xerox Corp.,* 77 F.R.D. 10, 13-15 (D.Conn.1977). As stated by one commentator: "All jury trials should have time limits less than the time now required." Kirst, *Finding a Role for the Civil Jury in Modern Litigation,* 64 Judicature 333, 337 (1986).

Under the circumstances of this case, the Court has no hesitation in placing a thirty day time limitation on the total length of this trial. Indeed, the Court believes that if this matter is diligently pursued by all counsel, it either will not be tried at all or will be tried in less than thirty days, due to the streamlining measures initiated by stipulations and this Order. The Court regrets, however, having to schedule this trial during the 1989 holiday season. Unfortunately, the month of December is tradi-

tionally the only time the Court could conduct a continuous thirty-day trial without seriously affecting the Court's regular docket.

N. CONCLUSION

The Court will utilize the parties' submissions as a basis for resolving many of the disputed evidentiary issues in this case prior to trial. This Order is entered without prejudice to the Court entering sanctions pursuant to Rule 16(f) or other provisions of the Federal Rules of Civil Procedure for failure to comply with pretrial scheduling orders. *See Roy v. American Professional Marketing, Inc.*, 117 F.R.D. 687 (W.D.Okla.1987); *Roberts v. McCrory*, 693 F.Supp. 998 (W.D.Okla.1987); *Lindsey v. United States*, 693 F.Supp. 1012 (W.D.Okla.1988).

As stated previously, no continuances or departures from the schedule set forth in this Order will be permitted.

IT IS SO ORDERED THIS *20th* DAY OF JANUARY, 1989.

(s) *Layn R. Phillips*
LAYN R. PHILLIPS
United States District Judge

EXHIBIT B

SUPPLEMENTAL JOINT STATEMENT OF UNCONTESTED FACTS

Filed Nov. 21, 1989

COME NOW the plaintiff and the defendants, pursuant to the court's pretrial scheduling order of January 20, 1989, as modified on July 27, 1989, and file this supplmental joint statement of uncontested facts. The following changes are reflected in this document:

a) Paragraphs 92 through 97 in the original Statement were deleted as they were duplicative of the current paragraphs 81 through 87.

b) The number 63 was changed to 57 in Paragraphs 55 and 56.

c) The word "conductivity" in Paragraph 113 was replaced with the word "transmissivity."

d) Paragraph 108 has remained the same. It should be deleted from HSC's Contested Facts.

e) The Volumes category on page 38 reflects recent agreement by the parties.

f) Stipulation Number 53 has been added.

GENERAL

1. The Royal N. Hardage industrial waste site ("the site") is located in McClain County, Oklahoma, approximately 15 miles southwest of Norman, Oklahoma and ½ mile west of the community of Criner, Oklahoma.

2. The site is located on the 160 acre quarter section in the southwest corner of Section 24, T6N, R4W.

3. The site is bounded on the south by State Highway 22, a gravel road on the west, on the east by three small farm ponds, and on the north by the northwest quarter of Section 24, and it was within this general area that

hazardous waste operations were conducted by Royal N. Hardage between 1972 and 1980.

4. The site constitutes a "facility" within the meaning of 42 U.S.C. § 9601(9).

SITE HISTORY-PERMITTING

5. On September 12, 1972, Royal N. Hardage applied to the Oklahoma State Department of Health (OSDH) for a permit to construct, operate, and maintain an Industrial Hazardous Waste Land Disposal facility on a portion of his property near Criner, McClain County, Oklahoma.

6. With his permit application of September 12, 1972, Hardage included a letter which outlined a general plan for managing the site which included the following proposals:

(a) Compartmentalized trenches dug in clay of "very low" permeability so that different chemicals and wastes could be separated at the time of disposal;

(b) Covering of filled trenches with soil to a minimum depth of two feet above the waste, then having the soil resodded with Bermuda grass;

(c) Ten feet of fill clay on each side of the trenches to prevent drainage into them;

(d) The possible consideration of placing extremely hazardous chemicals into separate containers or compartments;

(e) A gravel road into the site and a hog-wire type fence around the landfill;

(f) The maintenance of a complete log showing the type and the amount of waste and transport information on all deliveries made to the site; and

(g) Monthly reporting to the Oklahoma State Department of Health.

7. In connection with Royal Hardage's permit application, soil core samples had been collected at the proposed site by Standard Testing and Engineering Company of Enid, Oklahoma on August 30 and 31, 1972.

8. Laboratory testing consisted of moisture and density determinations and permeability tests on remolded samples using a Soiltest Model K-620 permeameter.

9. The company reported that the natural dry density of the clay-rich shale at a depth of approximately 29 feet ranged from 129.8 lb/ft^3 at 11.3% moisture in hole 5 to 125.8 lb/ft^3 at 11.5% moisture in hole 6, and that the average density was 127.8 lb/ft^3 at 11.4% moisture.

10. Remolded permeability samples were compacted to 121.1 lb/ft^3 at 13.5% moisture in hole 4, 126.3 lb/ft^3 at 11.4% moisture in hole 6, and 125.5 lb/ft^3 at 12.0% moisture in hole 7.

11. The company reported that the K values of the permeability tests ranged from 5.793×10^{-8} cm/sec in hole 4 to 1.906 in 10^{-8} cm/sec in hole 6 to 4.646×10^{-8} cm/sec in hole 7, and noted that according to *Soil Testing for Engineers* by T. William Lambe of Massachusetts Institute of Technology (1951), any soil with a K value of less than 10^{-7} cm/sec is considered "practically impermeable."

12. Since no established test standards existed for the application, the company warranted only that the test results were based on full compliance with the specified laboratory methods and procedures.

13. On September 15, 1972, based upon Hardage's application, Loyd F. Pummill, State Sanitary Engineer and R. Leroy Carpenter, M.D., State Commissioner of Health, Oklahoma State Department of Health granted Royal N. Hardage a permit to construct, operate and

maintain an Industrial Waste Disposal facility located approximately three quarters of a mile west of Criner, Oklahoma in SW¼, SW¼, and S½, NW¼ SW¼, Section 24, T6N, R4W, McClain County, Oklahoma under Permit No. 3544005.

14. The permit conditions were:

(a) In the event that a permeable lens or fissure was encountered during construction of a pit, a blanket of clay was to be used to develop a buffer against the lateral movement of waste material.

(b) The site was to be operated in a manner consistent with requirements of the Oklahoma State Department of Health, and disposal techniques were to be employed that would provide maximum protection to the environment, employees, and persons hauling wastes to the site.

(c) If the Oklahoma State Department of Health requested, the operator of the site would provide monitoring wells, as necessary, to monitor the possible escape of waste or dangerous derivatives from the site.

(d) When an active portion of the site was filled with waste, or when the site in its entirety was no longer capable of accepting waste for disposal, the portion of the site, or the site in its entirety, would be closed in a manner consistent with Section 4.3 of the Rules and Regulations of the Oklahoma Solid Waste Management Act.

15. On approximately October 2, 1972, shortly after receiving this operational permit, Royal Hardage opened his hazardous waste disposal site and began receiving waste.

16. On August 13, 1976, in order to comply with the Oklahoma Industrial Waste Act, House Bill 1811, Royal

Hardage proposed the following amendments to his disposal and operational plan:

(a) Establish three escrow accounts, in lieu of liability insurance, underground insurance, and performance bonds, respectively;

(b) Hire a qualified chemist or chemical engineer as site supervisor;

(c) Provide for the construction of fences and wells and the posting of signs;

(d) Formulate a plan to provide for soil farming of specific materials which are biodegradable;

(e) Construct a drying chamber for sludge and liquid wastes;

(f) Cover the main pit to exclude rainwater, to avoid seepage and spills and to eliminate odors created in wet conditions;

(g) Provide a trailer house for the site supervisor; and

(h) Provide a water tower and water system for latrine facilities and safety showers.

On August 30, 1976, the OSDH approved these amendments.

17. In September 1979, the Oklahoma State Department of Health initiated administrative procedures to revoke Hardage's permit based upon violations of the Oklahoma Controlled Industrial Waste Disposal Act and the Solid Waste Management Act and alleged violations of the conditions of Permit No. 3544005.

SITE HISTORY-OPERATIONS

18. Prior to the use of the Hardage site as a waste treatment, storage, and disposal facility, the property was most likely used in an agricultural fashion, as is evidenced

by examining an aerial, agricultural historical photograph dated December 12, 1969.

19. The site was open for the receipt of waste from October, 1972 through November, 1980 except for a period from February through August, 1976. Until June, 1979, the Hardage site was the only permitted industrial waste landfill in the State of Oklahoma.

20. Mr. Hardage received and accepted waste at the site from at least 385 known customers. Mr. Hardage determined the manner by which these solid wastes, hazardous wastes, and hazardous substances were treated, stored, and/or disposed of at the Hardage site.

21. Beginning in 1972, Mr. Hardage maintained a ledger showing the generator, transporter, description, volume, and after 1976, the ticket number for most wastes disposed of at the site. Beginning in 1976, shipping manifests were used to record the shipment of waste to the Hardage site.

22. Certain of Mr. Hardage's operational techniques were consistent with those practices conducted by owners and operators of other hazardous waste sites. At the Hardage site the general operations and site activities increased the ability of precipitation events to carry sediment from the source areas via surface pathways.

23. No job-related employee injuries occurred at the Hardage site during the years in which it was operative.

24. Waste materials were treated, stored, and/or disposed of in a limited number of areas that are referred to as the source areas. Based upon Mr. Hardage's knowledge, the disposal of waste never occurred at the Hardage site outside these source areas. Contaminated liquid from the "Main Pit" was sometimes used to irrigate grass at the site, and pond surfaces were agitated to increase evaporation. Some of Hardage's operations also resulted in removing vegetation. Generally, when vegetation has been removed, surface water runoff increases.

25. Most wastes received at the Hardage site were treated, stored, and/or disposed of in unlined pits after mixture with soil. Generally, wastes were not separated, and different types of wastes were commingled in the same pits. During a site visit on August 27, 1979, it was noted that the pits were unlined. It was also noted in the August 27, 1989 memorandum that there was no sampling program and no testing facilities were employed.

26. Many wastes received at the Hardage site were treated, stored, and/or disposed of within the Main Pit. The Main Pit was located on top of a ridge situated approximately at the center of the site. The depth was not uniform, due to a trench that had been dug along the west side of the pit floor at the time of its construction, and also due to the downward slope of the floor of the pit from south to north. Construction of the Main Pit included excavation of the site surficial soils and bedrock. The clay material recovered in excavating the Main Pit was used to construct a berm on the west side of the pit to compensate for the slope of the ground.

27. Both bulked and drummed wastes were disposed of in the Main Pit. Drummed wastes were sometimes permitted to roll down the bank of the Main Pit/Barrel Mound to its bottom during which the drum's ring and lid were occasionally loosened and separated from the rest of the drum.

28. In 1972, Mr. Hardage made an effort to segregate caustic and acidic wastes within the Main Pit. He dumped caustic waste into the south compartment of the trench and acidic waste into the north compartment in the Main Pit. This effort was later abandoned when the accumulation of rainwater caused the compartments to overflow and the contents to mix within the Main Pit. Water siphoned from the Main Pit was collected in a series of small ponds, 2 to 3 feet deep, which Hardage excavated in the drainageway located to the west of the Main Pit.

29. In December, 1974, Lawrence Kaputska, a graduate student at Oklahoma State University reported that Royal N. Hardage had begun the practice of draining liquid waste from the Main Pit into small ponds west of the Main Pit. In March, 1978, an Oklahoma State Department of Health inspection revealed that Mr. Hardage was pumping rainwater from the Main Pit into three smaller pits east of the Main Pit (the "East Pond area"). This liquid was sometimes sprayed into the Main Pit or onto its sides in order to enhance evaporation.

30. Waste materials were mixed with soil and redeposited in a landfill or stockpile area south of the Main Pit. Asphaltic sludge from the Main Pit and other bulk wastes were deposited in layers in one of the mixing pits, alternating the waste with layers of soil. The mixing pit that received alternate layers of soil, asphaltic sludge, and other bulk wastes eventually formed a mound, which then was covered with a final layer of fresh soil. The resultant mound area came to be known as the Sludge Mound. In addition to the waste/soil mixture, drums of cyanide waste and cyanide pots were buried within the Sludge Mound. Hardened cyanide had been received at the site in pots measuring 4 to 5 feet tall and 2 to 3 feet in diameter. Layers of dirt were placed between layers of waste.

31. By September, 1979, the Sludge Mound had been covered completely with 1 to 2 feet of dirt. Later, however, Mr. Hardage repeated the process of mixing soil and dirt with wastes and liquid that had been pumped or drained from the Main Pit. By April 28, 1981, this mixed material had been placed into the Main Pit and covered with soil. The mixing occurred in areas north, west, and east of the Main Pit.

32. When the wastes and contaminated soils had filled the Sludge Mound area to approximately the height of the original ground surface, the sludge and contaminated soils

were thereafter placed in alternating thin lifts. This practice resulted in elevating the Sludge Mound to a final height of 10 to 15 feet.

In 1976, a second pit was constructed north of the Main Pit (the "North Pit"). This new pit became the primary receptacle for bulk liquids and solid wastes. During this time, the Main Pit was emptied and deepened. The sludges from the Main Pit were taken to the mixing area of the Sludge Mound where they were dried. The sludges were deposited in approximately 5 inch layers within the Sludge Mound. Upon reopening the site in 1976, liquids from both the North and the Main Pits were periodically released into the West Pond area where they were mixed with soils. This mixture was then placed in the Main Pit.

33. In August or September, 1977, Mr. Hardage constructed a second dike west of the Main Pit. The main dike in the pit was then cut, and a portion of the liquids was drained into this secondary area that was approximately 40 to 50 feet wide and 150 feet long. The purpose of this activity was to provide more room in which to mix dirt with the liquids and thereby "dry up" the waste materials. Another mixing location was in the North Pit area where bulk wastes were mixed with soil in three long ponds.

34. In early 1979, Mr. Hardage began drying out the Main Pit by mixing liquids and sludges with dirt from the site. The Main Pit was emptied because he had a problem with accumulation of rainwater, which was a constant problem for Mr. Hardage. He intended to resolve the problem by constructing a roof over the Main Pit supported by telephone poles. However, the roof structure was never fully completed and the telephone poles were cut off at their base in 1980.

35. The majority of the wastes received at the Hardage site in 55-gallon drums were disposed of in its north-

ern section, later called the Barrel Mound. The practice of placing empty, and later full, barrels of waste in the pit of the Barrel Mound probably began in the fall of 1974. When Mr. Hardage buried barrels in the Barrel Mound, he placed contaminated soil around and on top of the barrels. Drummed wastes that were disposed of in the Barrel Mound were not separated by chemical type, but they were segregated from drummed waste disposed of on the west side of the Main Pit. Some drums were buried intact, but others were ruptured or punctured at the time they were disposed of in the Barrel Mound.

36. Drums were sometimes dumped onto the Barrel Mound by trucks tilting their beds which allowed the drums to roll into the Barrel Mound. The drums dumped in this manner often remained where they landed in the Barrel Mound. Small trucks sometimes drove on top of the Barrel Mound to deposit barrels or drums. A bulldozer was sometimes used to place soil on top of the barrels. Some drums in the Barrel Mound were observed leaking.

37. After the first few years of operation, arsenic and cyanide drums were placed along the eastern side of the Barrel Mound. Bags of asbestos insulation were also disposed of in this mound. These bags were placed among barrels on the face of the Barrel Mound and covered with earth. During this period, contaminated soils used to cover the barrels were excavated from the East Pond and West Pond area.

38. Construction of the Barrel Mound, which is contiguous with the Main Pit, began in the fall of 1974. The Main Pit and Barrel Mound are approximately 800 feet by 250 feet in plan dimension. The Sludge Mound is approximately 500 feet by 200 feet. The base of the Sludge Mound generally occurs at a depth of 22 feet, the base of the Main Pit ranges from about 14 feet at the southern end up to about 24 feet at the northern part,

and the depth to the base of the Barrel Mound is generally between 26 to 28 feet. The Barrel Mound was constructed by excavating in Stratum I to approximately 30 feet above the Stratum I/II contact. The Main Pit and Barrel Mound have a combined volume of approximately 117,200 cubic yards and the volume of the Sludge Mound is approximately 76,000 cubic yards.

39. As many as four hundred black, plastic-lined metal drums were stored unopened in a stack northwest of the Barrel Mound for approximately two years. Some of the drums had corroded.

40. Certain aspects of the operational history of the Hardage site may be determined by evaluating existing photographs. This evaluation provides the following information:

(a) A continuous north-south berm existed on the the western side of the Hardage site. This berm diverted surface water runoff from the west side of the berm toward the south to just below the South Pond.

(b) The road going into the Hardage site, shown on an October 4, 1975, aerial photograph, is the road to the east of the Sludge Mound, Main Pit, and Barrel Mound areas. This road could have acted as a barrier to surface runoff going east from these areas, because it generally follows the ridge line between the two drainages.

(c) A November 2, 1978 photograph shows that surface water runoff from the Barrel Mound, Main pit, and the Sludge Mound is toward the southwest. Runoff from the southwest corner of the Sludge Mound would reach the South Pond area.

(d) The November 2, 1978 photographs does not show any change in the road structures of the

Main Pit, Barrel Mound, and Sludge Mound that would indicate that surface water runoff from those areas could go east.

(e) The November, 1978 photograph shows that surface water runoff from the East Pit area would flow southeast toward the east drainage ditch.

(f) The September 9, 1979 photograph shows that the drainage from the North Pit area goes south, traveling between the main drainage channel and the Main Pit and then is diverted around a berm across a small access road and ends up in the South Pond.

(g) The September 9, 1979 photograph shows that surface drainage from the Main Pit, Barrel Mound, and Sludge Mound is generally toward the South Pond.

(h) In comparison to the October 4, 1975, aerial photograph of the Hardage site, the November 2, 1978, aerial photograph of the Hardage site shows that the west pits were no longer present and the west pit area appeared to be graded and fairly uniform; the sludge pit had been transformed into a mound and was completely covered over; the Main Pit contained a large amount of earth material with a small area of standing liquid; the Barrel Mound was larger; there was an east pit area consisting of four pits which did not contain liquid; the north pit area had a number of small diked pits all containing liquid; an interceptor trench had been dug just north of the south pond and contained liquid; some horizontal tanks were present near the Barrel Mound; and there was a berm between the drainage and the west pit area.

(i) The November 2, 1978 photograph does not indicate that any waste material was present in the east pit area.

(j) In comparison with a November 2, 1978, aerial photograph of the Hardage site, the 1979 aerial photograph shows that the interceptor trench was still present and it contained liquid; all the ponds in the west drainage were empty, and the west pit area appeared to be active; the Main Pit had "a lot of" liquid in it; there were drums in the Main Pit, and they extended into the Barrel Mound; the north pit area was no longer present, except for a small waste pit containing liquid; the building that had been under construction in 1978 had been completed, and there were drums around it; and the east pit area was no longer a pit area and had been revegetated.

(k) The September 2, 1979, photo of the site shows that the entire drainage ditch to the west of the Sludge Mound had been cleared of vegetation.

(*l*) The 1975 and 1978 photographs show that Royal Hardage built dikes, put berms around the mounds, dug pits to contain the waste, attempted to revegetate the west pit area and replant the two mound areas.

(m) A September 9, 1979, aerial photograph of the Hardage site shows that a berm had been constructed around the lower east farm pond in an attempt to keep runoff from entering the pond.

41. Hardage arranged with contractors to have a number of open boreholes installed at the site during its years of operation. In 1976, Standard Testing and Engineering drilled six uncased monitoring wells at the

Hardage site, each of whose diameter was 6 to 10 inches. These wells, later called "HW-Series" wells, varied in depth from approximately 25 feet to 89 feet. Since these uncased boreholes did not yield very much water, each was enlarged by Fred's Rat Hole Service sometime between 1976 and 1980 to a diameter of approximately 36 inches to 48 inches. By approximately 1980, at least five of these six uncased monitoring wells (Nos. 2 through 6) had been covered with concrete pads.

42. Two additional open boreholes were installed by Fred's Rat Hole Service on November 12 and 13, 1979. These wells were drilled to a depth of 31 feet and had diameters of 48 inches. Four other test holes were installed by Meyer Pump Service on March 1, 1982. These wells were drilled to a depth of 30 feet. On March 20, 1982, these wells were sampled by the Oklahoma State Department of Health, but, by March 24, 1982, one of them had been damaged by the use of heavy equipment at the Hardage site. Four additional boreholes were installed at the Hardage site by Fred's Rat Hole Service on March 26 and 29, 1982. Each of these holes were drilled at a depth of 30 feet and had a diameter of 48 inches.

43. Thereafter, additional open boreholes were either installed at the Hardage site or existing boreholes were enlarged. It is difficult to precisely distinguish between these two events from the existing documentary record. Three existing holes were either enlarged *or* three new boreholes were installed by Fred's Rat Hole Service on March 31, 1982. At this time, the final depth and diameter of these boreholes were 14 feet and 90 inches. 14 feet and 84 inches, 5 feet and 38 inches, respectively. Two final holes were either installed or enlarged by Fred's Rat Hole Service on April 6, 1982. At this time, these holes were drilled to a depth of 30 feet and a diameter of 48 inches. Consequently, in all, no less than 16 and no more than 21 boreholes were installed at the site by March, 1982.

44. As of 1979, there was no evidence that there was vertical movement of liquid downward into the ground water. There was evidence of surface seepage through the west wall of the Main Pit. In 1979, surface seepage was also observed from the excavated portion of the Main Pit's western dike. Materials were applied to the Main Pit and grass cover was provided over the site to decrease the rate of seepage and erosion. By August 25, 1980, there was evidence of erosion along the Main Pit dike and the west pits, while the southern half of the Main Pit was dried out and covered. By 1983-1984, some erosion of the Sludge and Barrel Mounds was evident and stains were observed on top of the Main Pit.

45. Mr. Hardage took a number of measures during his operations to prevent contaminated stormwater from leaving the site. These measures included the construction of trenches, ponds, and a drying shed to dry waste prior to placement, as well as installation of wells. However, these measures were not completely effective at localizing the waste constituents to the site. On at least one occasion following a rainstorm, surface water runoff was observed leaving the site from the mounds and flowing toward the southwest toward North Criner Creek.

46. On July 30, 1980, Diana Dutton, Director, Enforcement Division, United States Environmental Protection Agency, sent a letter to Royal N. Hardage requesting him to:

(a) Cease accepting any and all wastes;

(b) Cease removing liquids from the Main Pit and mixing them with soil in the small temporary pits;

(c) Cease any and all earthmoving or remedial actions at the site, except for containment of leachate, until approval had been received for such actions from the EPA;

(d) Erect a fence around the disposal site to secure it on all sides (specifically the north side);

(e) Contain all leachate from the mounds, pits, and dikes on-site;

(f) Provide the EPA with a written plan for determining the extent of ground-water contamination, said plan to include the drilling of soil borings and monitoring wells at different points to locate the depth and extent of ground-water contamination and to determine the direction and rate of flow of the ground water. In addition, provide the EPA with a timetable for implementation of the plan once it is approved by the EPA;

(g) Provide the EPA with a map showing the location, nature, and quantities of all wastes, and other chemicals disposed of on-site;

(h) Provide the EPA with information identifying the extent of soil contamination on the site. If this information is not immediately obtainable, provide the EPA with a plan, timetable and procedure for obtaining the information;

(i) Provide the EPA with a plan for the cleanup of the site, i.e., the containment and proper disposal of wastes including those contained in the Barrel and Sludge Mounds;

(j) Provide the EPA with a plan for final disposal of on-site contamination soils, and in addition, a timetable for implementation of the plan once it is approved by the EPA;

(k) Provide the EPA with a plan for determining the extent of the off-site contamination and a timetable for implementing the plan; and

(*l*) Provide the EPA with a plan for cleaning up off-site contamination, if any, and a timetable

for implementation of the plan once it is approved by the EPA. [HCA008 2089-2090.]

47. The Hardage site closed for receipt of hazardous and industrial waste on November 18, 1980, prior to the November 19, 1980 effective date of regulations published pursuant to the Resource Conversation and Recovery Act, and has remained closed to the present. From 1980 through early 1981, Mr. Hardage conducted a number of closure activities including pumping liquid from the Main Pit into shallow pits, mixing the liquid wtih soil, then transporting the liquid back into the Main Pit; drilling two new interceptor wells to the southwest of the existing monitoring wells; and emptying waste from the sludge drying building. Additional site closure activities included covering the Main Pit and the Barrel Mound with approximately 3 feet of site soil; covering one of the two mixing areas with soil and grass about 4 to 6 inches deep; scraping the North Pit and South Pond and depositing the material from this area on the Sludge Mount; and covering the Sludge Mound with approximately three feet of soil.

48. Approximately 20 million gallons of hazardous substances were transported to, treated at, stored at and/or disposed of at the Hardage site.

49. Various departments, agencies and instrumentalities of the United States arranged for disposal or treatment by contract agreement or otherwise of approximately 920,000 gallons of hazardous substances at the Hardage site.

50. The remaining Defendants arranged for disposal or treatment by contract agreement or otherwise of approximately 8.2 million gallons of hazardous substances at the Hardage site.

51. Various "orphans," or parties potentially financially unable to pay their reasonable allocation of response or remedial costs associated with the Hardage

site, arranged for disposal or treatment by contract agreement or otherwise of approximately 9.0 million gallons of hazardous substances at the Hardage site.

52. The Hardage Steering Committee Defendants arranged for disposal or treatment by contract agreement or otherwise of approximately 6.9 million gallons of hazardous substances at the Hardage site.

53. Because of the generation of hazardous substances by varous agencies or instrumentalities of the United States, the United States is a person liable for relief in connection with the Hardage site pursuant to CERCLA § 106 42 U.S.C. § 9606, and 107, 42 U.S.C. § 9607. The United States reserves its rights to argue that the activities of the United States Environmental Protection Agency should not be considered among the equitable factors in any contribution claim under CERCLA § 113 and that such activities do not give rise to any liability, and further that the liability arising from the generation of hazardous substances may be satisfied other than by contribution to the HSC.

54. The United States and the Hardage Steering Committee Defendants do not agree about the significance of the "orphan share." Both the United States and the Hardage Steering Committee expressly reserve their rights to assert the liability of any and all persons for the orphan share or any part thereof, including but not limited to, the liability of parent for subsidiary, of master for servant or of transporter for generator.

REGULATORY OVERSIGHT/INVESTIGATIONS AND STUDIES

55. The parties stipulate that the observations and sampling results listed in stipulation 57 have been reported in one or more documents. The parties reserve the right to contest at trial the accuracy of the observations and sampling results.

56. The parties raise no issues pertaining to the admissibility of reports of investigations and studies except

that the parties reserve the right to contest at trial the use of and weight to be accorded particular data, observations and conclusions contained in documents listed under stipulation 57.

57. Relevant regulatory inspections and visits and site investigations and studies (including sampling and analysis) conducted by state and federal regulatory agencies, or their agents, and by regulated individuals or entities, or their agents and by the Hardage Steering Committee and its agents, include, but are not limited to:

57.1 On August 22, 1972 an inspecton was conducted by the Oklahoma State Department of Health on the soils at the Hardage site.

57.2 On November 14, 1973 a county sanitarian inspected the Hardage site.

57.3 On January 3, 1972 Robert L. McAlister, an Oklahoma State Department of Health official, inspected the Hardage site.

57.4 On September 19, 1974, C.T. Grant, Chief of Sanitary Services and Preston Carter of the Oklahoma City-County Health Department made an on-site inspection of the Hardage site.

57.5 In 1974 Lawrence Kapustka conducted an investigation of the chemical properties of the waste material and vegetation at the Hardage site.

57.6 On January 24, 1975 two county sanitarians, including Jerry L. Miller, inspected the Hardage site.

57.7 On June 12, 1975 the Governor of Oklahoma signed Section 14 of Senate Bill 76 which amended Section 2256 of the Oklahoma Solid Waste Management Act of 1970.

57.8 On June 29, 1975 the Oklahoma State Department of Health amended Regulation 5.6 of the

Oklahoma Solid Waste Management Act of 1970.

57.9 On July 10, 1975 the Oklahoma State Department of Health notified Royal N. Hardage of the amendments to Regulation 5.6 and Section 2256 of the Oklahoma Solid Waste Management Act of 1970.

57.10 On October 30, 1975 Jerry L. Miller, County Sanitarian, inspected the Hardage site.

57.11 On November 21, 1975 M.J. Bradford and Dave Redmond inspected the Hardage site.

57.12 On January 6, 1976 Jerry L. Miller, County Sanitarian, inspected the Hardage site.

57.13 On April 15, 1976 Dick Jones, Narayan Guatam and M. John Bradford, of the Oklahoma State Department of Health, inspected the Hardage site.

57.14 On August 13, 1976 the Oklahoma State Department of Health sampled the ground water from Hardage monitoring wells #1, #2, #3 and #4.

57.15 On August 30, 1976 the Oklahoma State Department of Health approved Royal N. Hardage's "Amended Plan of Operation Controlled Industrial Waste Site" in compliance with House Bill 1811.

57.16 On September 13, 1976 John Bradford and Dick Jones of the Oklahoma State Department of Health inspected the Hardage site.

57.17 On September 17, 1976 H.A. Caves and John Bradford of the Oklahoma State Department of Health and Jerry Miller, County Sanitarian, inspected the Hardage site.

57.18 On November 2, 1976, John Bradford of the Oklahoma State Department of Health and

Jerry Miller, County Sanitarian, inspected the Hardage site.

57.19 On March 1, 1977 Jerry L. Miller and Don Hensch, sanitarians for the Oklahoma State Department of Health, inspected the Hardage site.

57.20 On August 24, 1977 the Oklahoma State Department of Health sampled five of the HW-series wells and one surface water sample from the Hardage site.

57.21 In October, 1977 the Oklahoma State Department of Health inspected the Hardage site.

57.22 On March 21, 1978 Donald A. Hensch, Christina D. Richards, Richard J. Moles of the Oklahoma State Department of Health and Jerry Miller, County Sanitarian, inspected the Hardage site accompanied by Roger Hall, the Hardage site chemist.

57.23 On April 26, 1978 R.J. Moles and Jack Wilkins from the Oklahoma State Department of Health inspected the Hardage site accompanied by Roger Hall, the Hardage site chemist.

57.24 On June 13, 1978 R.J. Moles from the Oklahoma State Department of Health inspected the Hardage site accompaied by Roger Hall, the Hardage site chemist.

57.25 On July 12, 1978 R.J. Moles from the Oklahoma State Department of Health inspected the Hardage site accompanied by Roger Hall, the Hardage site chemist.

57.26 On August 1, 1978 U.S. EPA notified Royal Hardage of proposed federal regulations decreasing the lower limit of "PCB mixture" and proposing methods to dispose of transformers with dielectric fluid with less than 500 ppm but greater than or equal to 50 ppm PCB.

57.27 On August 1, 1978 R.J. Moles from the Oklahoma State Department of Health inspected the Hardage site accompanied by Roger Hall, the Hardage site chemist.

57.28 On September 13, 1978 ground-water samples were collected from the six HW-series wells by the Oklahoma State Department of Health.

57.29 On October 31, 1978 five ground-water samples from the HW-series wells and one surface water sample from the West Pond were collected by the Oklahoma State Department of Health.

57.30 On November 21, 1978 an Oklahoma State Department of Health official inspected the Hardage site.

57.31 On January 15, 1979 six ground-water samples were collected from the Hardage wells by the Oklahoma State Department of Health.

57.32 In February and March, 1979, EPA sampled milk, fish, tap water, surface water, and liquids at the site.

57.33 On March 13, 1979 the Oklahoma State Department of Health inspected the Hardage site.

57.34 On April 11, 1979 the Oklahoma State Department of Health inspected the Hardage site.

57.35 On June 22, 1979 the Oklahoma State Department of Health collected three ground-water samples from three HW-series wells at the Hardage site.

57.36 On June 27, 1979 Donald A. Hensch, Director, Industrial Waste Division; H.A. Caves, Chief of Industrial and Solid Waste Service; Ralph Harkins of EPA Region VI; Jim Rolin, Fish and Wildlife Ranger; Jerry Miller, County Sanitarian; and a camera crew from KWTV, Channel 9 in Oklahoma City, inspected the Hardage site.

57.37 On August 1, 1979 two ground-water samples were collected by the Oklahoma State Department of Health.

57.38 On August 15, 1979 the Oklahoma State Department of Health collected water samples from the Hardage site.

57.39 On August 15, 1979 Kenneth C. Burns; RPS Industrial Waste Division, Donald A. Hensch, Director of Industrial Waste Division; Bob Benefield and S.C. Yin of EPA Region VI S & A Division; and Joe Field of EPA Region VI, Dallas office, accompanied by Roger Hall, the Hardage site chemist, inspected the Hardage site.

57.40 On August 15, 1979, EPA took ground water, surface water, surface soil, and waste samples at the site.

57.41 On September 7, 1979 the Oklahoma State Department of Health filed a Petition for an administrative action against Royal N. Hardage alleging violation of the Oklahoma Controlled Industrial Waste Disposal Act, the Solid Waste Act, and his permit.

57.42 In October, 1979 the Oklahoma State Department of Health sampled eight water wells near the Hardage site.

57.43 On October 11, 1979 Donald Hensch of the Oklahoma State Department of Health investigated the Hardage site.

57.44 On October 16, 1979 the Industrial Waste Division of the Oklahoma State Department of Health conducted an investigation into the threat of possible contamination of drinking water supplies in the Criner area and collected water samplase on and off-site in the course of their investigation.

57.45 On October 31, 1979 two tap water samples from Bill Henson's and Ann Whitehead's kitchen sinks were collected by the Oklahoma State Department of Health.

57.46 On November 1, 1979 three surface water samples were taken by the Oklahoma State Department of Health from the Bearden Pond and North Criner Creek.

57.47 On November 6, 1979 six groundwater samples were collected from the Hardage Wells by the Oklahoma State Department of Health.

57.48 On November 19-20, 1979 seven surface and three well samples were taken by the Oklahoma State Department of Health from the Hardage site.

57.49 In 1980 an interim order was issued by the hearing examiner from Oklahoma State Department of Health regarding well sampling.

57.50 On January 18, 1980 the Oklahoma State Department of Health collected one sediment sample from North Criner Creek.

57.51 In January 1980 the EPA sent for analysis eleven soil samples, seven sediment samples, and one catfish sample from the general Hardage area.

57.52 On February 26, 1980 the Oklahoma State Department of Health collected four soil, nine ground-water and three tap water samples.

57.53 On April 1, 1980 the Oklahoma State Department of Health collected seven soil samples at the Hardage site.

57.54 From April 28, to May 2, 1980, an administrative hearing was held on Royal N. Hardage's permit pursuant to an Oklahoma State Department of Health administrative petition.

57.55 On May 29, 1980 EPA notified H.A. Caves of the Oklahoma State Department of Health that the plans developed as a result of the State of Oklahoma's hearing on the Hardage site were insufficient and did not address more long-term remedies.

57.56 On July 15, 1980 Kenneth C. Burns, Russell Bartley, and Bill McAnally, accompanied by Royal N. Hardage, inspected the Hardage site and sampled the HW-Wells 1, 4 and 5.

57.57 On July 30, 1980 Diana Dutton of the U.S. EPA Region VI notified Royal N. Hardage of certain actions that needed to be taken.

57.58 On August 13, 1980 the Oklahoma State Department of Health collected three tap water samples from the Smith, Whitehead Dairy and Bearden Wells.

57.59 On August 14, 1980 an off-site sampling investigation was conducted by the EPA near the Hardage site. Three sediment samples were taken.

57.60 On August 14, 1980 Royal Hardage notified EPA of hazardous waste activity under RCRA but withdrew the notification on November 18, 1980.

57.61 On September 22, 1980 the EPA determined that the Oklahoma State Department of Health findings indicated that the Leonard Bearden (now the Stephen's property) and W.S. Smith wells should be sampled.

57.62 On October 1 and 2, 1980 EPA collected eight well water, and five sediment samples from the Hardage site.

57.63 On October 2, 1980 the Oklahoma State Department of Health collected a tap water sample from the Bearden well.

57.64 On January 16, 1981, three surface water, three sediment, four soil and five well samples were taken by the Oklahoma State Department of Health from the Hardage site.

57.65 On April 27, 1981, one soil, two sediment and four tap water samples were taken by the Oklahoma State Department of Health from the Hardage site.

57.66 On April 28, 1981 Russell Bartley of EPA Region VI; Paul M. Witthoeft of EPA Region VI; Jack McClure, geologist from Dames & Moore; Jerry Thornhill, EPA hydrologist; and Roger Cosby, EPA chemist; inspected the Hardage site.

57.67 On July 31, 1981 Dames & Moore prepared a report based on an on-site investigation and review of available data from the Hardage site.

57.68 On September 25, 1981 the Oklahoma State Department of Health collected five tap water samples from residences near the Hardage site.

57.69 On October 27, 1981 the Oklahoma State Department of Health collected six tap water and four surface water samples near the Hardage site.

57.70 On November 9, 1981, ten sediment, nine well, and twelve surface water samples were taken by the Oklahoma State Department of Health from the Hardage site.

57.71 In December 1981 the Oklahoma State Department of Health reached agreement with Dr. Earnest L. Koerner, Mr. Hardage's consultant, on boring locations and sampling protocols.

57.72 On March 11, 1982 the Oklahoma State Department of Health determined that EPA's assistance might be necessary to take borings un-

less Mr. Hardage soon provided a drilling rig and drilling crew.

57.73 On March 17, 1982 the Oklahoma State Department of Health collected water samples from the Bearden (now Stephens) house, the new pump at the Corley house, the Whitehead house, the Whitehead Dairy, and the Smith house, all near the Hardage site.

57.74 On March 17, 1982 the Oklahoma State Department of Health conducted a quarterly sampling of the private wells in the area of the Hardage site.

57.75 On March 20, 1982 the Oklahoma State Department of Health collected surface water and surface seepage samples from the Hardage site.

57.76 On March 21, 1982 the Oklahoma State Department of Health collected twelve groundwater samples from the Hardage wells.

57.77 From March 23, 1982 to April 8, 1982 Imre Sekelyhidi, Tom Smith, Sandra Antoinette, and Larry Landry of Ecology and Environment, Inc. inspected the Hardage site.

57.78 Between March 23 and April 18, 1982, EPA (using Ecology and Environment) drilled ten borings and took soil samples at various depths in each boring; completed borings as monitoring wells (EW series); sampled ground water in wells; took surface sediment and tap water samples on and off-site; and sampled monitoring well levels.

57.79 On March 24, 1982 the Oklahoma State Department of Health collected water samples from the Corley house well number 1, Corley house well number 2 and the Smith well.

57.80 On March 25, 1982 the Oklahoma State Department of Health collected a water sample from North Criner Creek and from the Corley house.

57.81 On April 8, 1982 the Oklahoma State Department of Health collected a ground-water sample from the Perry Baker well and five water samples from the Corley house, both located near the Hardage site.

57.82 In April 1982, EPA inspected both on-site and off-site wells.

57.83 On June 25, 1982 the Oklahoma State Department of Health collected eight water samples from residences near the Hardage site.

57.84 On June 30, 1982 the Oklahoma State Department of Health collected four surface water, ten tap water and two ground-water samples.

57.85 Around July 1, 1982 the Oklahoma State Department of Health monitored areas adjacent to the Hardage site.

57.86 On July 1, 1982 the Oklahoma State Department of Health collected a raw milk sample from the Whitehead Dairy.

57.87 On July 1, and July 8, 1982 the Oklahoma State Department of Health collected eight filtered water samples from the Corley house and one water sample from the Atkinson (Stephens) house.

57.88 On July 9, 1982 Royal N. Hardage's permit hearing was set for August 3, 1982.

57.89 On July 14, 1982 the Oklahoma State Department of Health collected a tap water sample from the Atkinson's (Stephens) kitchen sink.

57.90 On July 29, 1982 the Oklahoma State Department of Health collected five tap water samples from the wells of the Corley residence.

57.91 On August 16, 1982 the Oklahoma State Department of Health collected ten ground-water samples from EPA wells (EW-series) at the Hardage site and four surface water samples from the interceptor trench, northeast pond, southeast pond and the dredged pond.

57.92 In the spring of 1983 Douglas Kent assisted with an electrical resistivity survey of North Criner Creek alluvium; constructed outcrop stratigraphic sections; fracture measurements; and one laboratory hydraulic conductivity test.

57.93 On September 2, 1982 the Oklahoma State Department of Health collected water samples from the Corley and the Atkinson (Stephens) wells.

57.94 On September 15, 1982 Mark S. Coleman, Deputy Commissioner for Environmental Health Services, Oklahoma State Department of Health, advised the Office of the Governor of the Department's activities at the Hardage site and of a possible cap and trench remedy for the Hardage site.

57.95 On October 4, 1982 the Oklahoma State Department of Health collected a water sample from the Hollis Atkinson (Stephens) well and a water sample from the Luther Corley well.

57.96 On December 13, 1982 the Oklahoma State Department of Health collected water samples from the old and new Corley wells, the Smith well, EPA Well Nos. 9 and 10, from downstream of the site in North Criner Creek, the Hollis Atkinson (Stephens) well, the Ann Whitehead well, the Whitehead Dairy west well, the Whitehead Dairy center well, and upstream of the site in North Criner Creek.

57.97 On Jauray 3, 1983, CH_2M Hill released its Draft Feasibility Study Work Plan.

57.98 On January 26, 1983 Joan K. Leavitt of the Oklahoma State Department of Health requested assistance from EPA to conduct remedial response action at the Hardage site.

57.99 On May 10, 1983 the Oklahoma State Department of Health collected ground-water samples from the new Corley well, the Bearden/Atkinson (Stephens) well, North Criner Creek, and from the property of Ann Whitehead in North Criner Creek upstream of the site.

57.100 On July 18, 1983 CH2M Hill completed a draft work plan and statement of work for a feasibility study for the Hardage site.

57.101 On September 19 and 20, 1983 a meeting was held among CH2M Hill, U.S. EPA, the Oklahoma State Department of Health, Chen and Associates, Wright Water Engineers, and D'Appolonia to evaluate the Hardage site remedial investigation activities.

57.102 On December 15, 1983 the Oklahoma State Department of Health collected a water sample from the Whitehead center well.

57.103 On February 24, 1984 Tim Underwood and Don Terrell from the Oklahoma State Department of Health completed an inspection of the fence at the Hardage site.

57.104 From August through September 1984 and July 1985, CH2M Hill drilled twenty borings and took soil samples at various depths in each boring; completed 19 as monitoring wells (BW, PW, GTW, and AW series); sampled four EW-series wells; sampled surface water, ground water, source areas, waste, surface magnetometer survey and boring study of source areas (Main Pit and Sludge Mound); and conducted bedrock packer and geotechnical tests.

57.105 On January 14, 1985 the Oklahoma State Department of Health collected two surface water samples near the Hardage site, from North Criner Creek downstream of the Corley residence and from North Criner Creek upstream of the Corley residence, and a ground-water sample from the Whitehead Dairy, southwest of the Hardage site.

57.106 On July 23, 1985 EPA took tap water and ground-water samples in residents' wells.

57.107 On April 29, 1986 the Oklahoma State Department of Health collected tap water samples from the new Corley well, Smith well, Whitehead Dairy, Ann Whitehead well, Smith/Bearden well, EPA well Nos. 9 and 10, the old Corley well, and North Criner Creek.

57.108 On May 30, 1986 Alan Tavenner, RSPO, EPA Region VI, and Dennis H. Hrebec of the Oklahoma State Department of Health, inspected the Hardage site.

57.109 On June 25, 1986 TAT members Catherine Price and Linda Chatman; EPA OSC member Mary L. McClary; Dennis Hrebec of the Oklahoma State Department of Health; and Alan Tavenner, EPA NPL representative, inspected the Hardage site.

57.110 From July 23, 1986 to November 8, 1986, ERM-Southwest conducted 165 packer tests in 26 boreholes at the site.

57.111 From July 23, 1986 to December 16, 1986, ERM-Southwest completed the installation of seventeen monitor wells, nineteen geotechnical borings, three test borings, three background borings, seven slant hole borings, and one deep boring.

57.112 On July 24, 1986 ERM-Southwest collected four surface water samples from North Criner Creek.

57.113 From July 29, 1986 to November 21, 1986 ERM-Southwest collected sixty-six soil, ground-water and surface seepage samples from the MW-series wells and B-series borings.

57.114 In August 1986 ERM-Southwest performed outcrop reconnaissance mapping both on and off-site.

57.115 From August 1986 to November 1986 ERM-Southwest ran geophysical logs in twenty-three boreholes.

57.116 From August 10 to September 22, 1986 ERM-Southwest ran two bromide ground-water trace tests.

57.117 From August 1986 to the present (as of October 5, 1989) ERM-Southwest has measured water levels in monitoring wells monthy or weekly.

57.118 On September 3, December 4, 1986 and February 12, 1987, Professional Service Industries submitted reports of laboratory vertical hydraulic conductivity tests on thirty-eight bedrock core samples collected by ERM-Southwest.

57.119 From September 11 to September 16, 1986 ERM-Southwest collected thirteen ground-water samples, of which eleven samples were spit with EPA, for EPA/HSC split samples on selected EPA/HSC wells.

57.120 On October 21, 1986 Alan Tavenner of EPA Region VI inspected the Hardage site.

57.121 On November 7, 1986 ERM-Southwest collected three samples of non-aqueous liquid in B-13.

57.122 On November 14, 1986, EPA issued its Record of Decision for the first operable unit.

57.123 On December 4, 1986 Professional Service Industries collected geotechnical data from the Hardage site.

57.124 On August 29, 1986 CH2M Hill released its report entitled "Preliminary Public Health Assessment" and also in that year, CH2M Hill released its report entitled "Endangerment Assessment."

57.125 On January 13, February 16 and April 16, 1987, ERM-Southwest and Southwestern Laboratories conducted pH, specific conductance, and sulfate analyses from twenty-six ground-water samples.

57.126 From February 2 to February 23, 1987 ERM-Southwest recompleted the construction of monitor well MW-4D-R.

57.127 From February 11 to February 18, 1987 ERM-Southwest completed three deep borings (DH-2, DH-3, and DH-4) at the Hardage site.

57.128 From February 18 to February 19, 1987 E & E collected for EPA forty soil samples from Hardage site.

57.129 From April 27 to May 21, 1987 ERM-Southwest collected ninety-four ground-water, soil/sediment, and surface water samples from the site, of which eighty-one samples were split by E & E for EPA.

57.130 In May 1987, EPA conducted ground analyses to coordinate with seven aerial photos taken from 1969 to 1987.

57.131 On May 27, 1987 Francis E. Benenati visited the Hardage site.

57.132 From August 31 to September 1, 1987 ERM-Southwest completed eight piezometers and one pumping test well in the North Criner Creek alluvium.

57.133 From September 27 to October 7, 1987 ERM-Southwest conducted six infiltration tests on the source mounds.

57.134 From October 1 to October 10, 1987 ERM-Southwest collected one hundred and ten soil/water samples from the source mounds for chemical tests, including TCLPs, BTU and ash content.

57.135 On October 4, 1987 ERM-Southwest conducted four mound borehole slug tests for field permeability.

57.136 During 1988 Dr. R.R. Parizek completed an analysis of photolinears at the Hardage site.

57.137 During January, 1988, Dr. R.R. Parizek issued a report describing the characteristics of outcrops at and near the Hardage site.

57.138 From January 19 to June 19, 1988, ERM-Southwest completed four deep borings at the site, including completion of monitoring well MW-8D.

57.139 From January 23 to January 24, 1988 ERM-Southwest conducted pumping tests in monitoring well MW-2M.

57.140 From February 8 to April 20, 1988 ERM-Southwest conducted eight recovery and shut-in tests on the deep holes at the site.

57.141 From February 10 to September 1, 1988 ERM-Southwest collected seventeen ground water samples at the site for geochemical analysis.

57.142 From February 13 to February 14, 1988, Seismograph Service Corporation conducted a surface reflection survey and vertical seismic profiling in deep borings DH-6 and DH-7.

57.143 From February 16 to March 17, 1988, ERM-Southwest completed four slant geotechnical borings at the site.

57.144 From February 16 to April 5, 1988 Century Geophysical conducted geophysical logging on deep holes DH-5, DH-6, DH-7, and DH-8 and slant hole borings SB-8, SB-9, SB-10, and SB-11.

57.145 From February 20 to March 20, 1988, Geolog ran the Acoustic Televiewer in deep holes DH-5, DH-6, DH-7, and DH-8 and slant hole borings SB-8, SB-9, SB-10, and SB-11.

57.146 From February 21, to May 3, 1988 ERM-Southwest conducted packer tests in deep holes DH-5, DH-6, DH-7, and DH-8 and slant hole borings SB-8, SB-9, SB-10, and SB-11.

57.147 From February 23 to September 16, 1988 Earth Technology Corporation conducted laboratory hydraulic conductivity tests on core samples from deep borings DH-5, DH-6, and DH-7 and conducted compatibility tests.

57.148 From February 29 to March 4, 1988 CH_2M Hill conducted geophysical refraction surveys.

57.149 In spring 1988, CH_2M Hill completed two borings through the Sludge Mound and Main Pit; dug two test pits in the Sludge Mound and Main Pit; took air emissions samples; and conducted a shallow seismic study in the West Pond area.

57.150 From March 8 to July 12, 1988 ERM-Southwest collected twenty-four ground-water and surface water samples for isotopic analysis.

57.151 On March 10, 1988 CH_2M Hill and ERM-Southwest collected nine soil samples from EPA clay borrow test pits from the West Pond and other areas west of the source mounds.

57.152 From March 23 to May 2, 1988, CH_2M Hill conducted a "Fixation and Stabilization Study" on one hundred samples.

57.153 From March 23 to June 19, 1988 Westbay Instruments Ltd. conducted fluid pressure measure-

ments and ground-water sampling on one hundred and seventy samples on deep holes, DH-5 and DH-6.

57.154 From April 6 to April 27, 1988 Golder Associates conducted fifty packer tests on the deep holes and slant hole borings.

57.155 From April 13 to April 20, 1988 ERM-Southwest conducted solid geotechnical tests on the barrel mound.

57.156 From April 19 to June 24, 1988 Jacobs Engineering and Metcalfe & Eddy (EPA subcontractors) drilled two slant hole borings for EPA (AB-1 and AB-2) and conducted a pumping test in EPA monitoring well GTW-03.

57.157 From April 20 to August 26, 1988 ERM-Southwest collected one hundred and nine bedrock leachate samples for inorganic analysis.

57.158 From May 13 to May 19, 1988 ERM-Southwest collected thirty-nine samples from the barrel mound for chemical characteristics, including TCLPs, density, flashpoint, BTU, ash content and viscosity.

51.159 In June, 1988 ERM-Southwest conducted alluvial seismic surveys near North Criner Creek.

57.160 From June 1 to June 6, 1988 ERM-Southwest collected bedrock samples for thin section analysis and x-ray diffraction analysis.

57.161 From June 2 to June 17, 1388 the University of Western Ontario Geotechnical Research Centre conducted diffusion coefficient tests on core samples from deep borings DH-5 and DH-8 and slant borings SB-8, SB-9, and SB-10.

57.162 From July 6 to October 10, 1988 ERM-Southwest installed thirty-seven monitor wells, one piezometer, one boring, eight temporary obser-

vation wells, and one well for a pumping test, and replaced one existing monitor well and repaired one existing monitor well.

57.163 From July 7 to October 7, 1988 ERM-Southwest installed staff gauges, pond and stream piezometers, seepage meters, flumes, and two weirs at the site.

57.164 On July 11 and 12, 1988 ERM-Southwest conducted magnetometer surveys on twenty-nine locations around the mounds and South Pond.

57.165 From July 11, 1988 to present ERM-Southwest has been recording water levels in pond and creek piezometers.

57.166 From July 11 to July 13, 1988, ERM-Southwest collected thirty-four surficial soil samples from the site for chemical analysis.

57.167 From July 20 to October 5, 1988 ERM-Southwest collected fifty-seven ground-water samples from fifteen monitor wells for plume definition for chemical analysis.

57.168 On July 28, 1988 ERM-Southwest collected fifteen sediment samples from the site for chemical analysis.

57.169 During the summer and fall of 1988 and March 1989 ERM-Southwest conducted an inventory of water wells in the vicinity of the site.

57.170 In August, 1988 an on-site meteorological station installed by ERM-Southwest became operational.

57.171 In August, 1988 ERM-Southwest conducted packer tests at the MW-12 nest and MW-18 nest.

57.172 In August, 1988 ERM-Southwest collected eleven structure, tank, and drum samples for chemical analysis.

57.173 From August 9 to August 12, 1988 ERM-Southwest collected nine surface water samples from the Hardage site for chemical analysis.

57.174 In August and September, 1988 Century Geophysical Corporation ran geophysical logs in fifteen boreholes at the site.

57.175 In August, 1988 ERM-Southwest conducted geological reconnaissance field work on-site and within an approximately one-mile radius of the site.

57.176 From September to November 1988, ERM-Southwest conducted pumping, slug, and packer tests at the Hardage site.

57.177 From September 2 ot September 21, 1988 ERM-Southwest completed seven borings (B-15 to B-21) southeast of the sludge mound.

57.178 From September 13, 1988 to present ERM-Southwest has been taking flume measurements in North Criner Creek to measure the flow.

57.179 Between September 16 and 18, 1988 approximately 200 gallons of ground water were removed from well DH-8W at the Hardage site.

57.180 Between October 6 and 9, 1988 approximately 300 gallons of ground water were removed from well DH-8W at the Hardage site.

57.181 On October 10, 1988 well DH-8W at the Hardage site was sampled.

57.182 From October 10 to Ocotber 13, 1988 ERM-Southwest collected seventeen test pit/boring soil and soil/waste samples at the Hardage site for chemical analysis.

57.183 From October 11 to October 17, 1988 ERM-Southwest collected ground-water samples from

eighty-two wells for the comprehensive sampling event for chemical analysis.

57.184 From November 1988 to the present ERM-Southwest has been monitoring water levels in monitor wells MW-12S, MW-12M, WM-28, MW-3S, MW-4S, MW-5S with continuous water level recorders.

57.185 On November 17, 1988 ERM-Southwest collected a seep sample from the east farm pond area for chemical analysis.

57.186 On or about December 13, 1988 ERM-Southwest, Inc. completed the sampling of deep monitoring well DH-8W.

LITIGATION HISTORY

58. On or about September 8, 1980, the Government filed a Complaint against Royal N. Hardage, the owner and operator of the Hardage site, under § 7003 of RCRA, 42 U.S.C. § 6973.

59. Following the passage of CERCLA, this complaint was amended and supplemented in June 1982, to include claims for injunctive relief under § 106 of CERCLA, 42 U.S.C. § 9606, and for cost recovery under § 107 of CERCLA, 42 U.S.C. § 9607.

60. The Court held Mr. Hardage liable on December 13, 1982.

61. The court bifurcated the liability from the remedy aspects of the case, and after a hearing on liability, the court ruled on December 31, 1982, that Mr. Hardage was a liable party.

62. The Honorable Lee R. West entered an Order on July 18, 1983, directing Royal N. Hardage to allow the U.S. Environmental Protection Agency to enter and inspect the Hardage site.

63. The United States received a judgment against Mr. Hardage in the amount of $211,795.05; on August 25, 1983. Royal N. Hardage commenced bankruptcy proceedings in the United States Bankruptcy Court for the Western District of Oklahoma and all claims against Mr. Hardage by the United States were subsequently discharged.

64. EPA notified the Defendants that they were potentially responsible parties ("PRPs") for the Hardage site in December, 1984.

65. On January 24, 1985, the EPA held a public briefing in Dallas, Texas calling for organization of the PRPs, and at that time, EPA was notified that the Hardage Steering Committee ("HSC") had been established by the PRPs.

66. On July 18, 1985, the case styled *United States of America v. Hardage,* Case No. CIV-80-1301W was administratively closed.

67. On September 6, 1985, EPA advised the HSC of its intent to divide the study and remediation of the site into two operable units: the first being source control and the second being management of migration.

68. In February 1986, EPA affirmed its decision to separate the issue of source control and migration for purposes of the study and remediation of the site.

ENDANGERMENT/RISK

69. There may be an "imminent and substantial endangerment to the public health or welfare or the environment because of an actual or threatened release of a hazardous substance from the Hardage site", within the meaning of Section 106(a) of CERCLA, that is legally sufficient to require a remedy for the Hardage site.

70. Releases of hazardous substances have occurred at the Hardage site.

71. An assessment of risks to human health and the environment at a Superfund site may include the following: (a) identification of hazardous substances on-site; (b) evaluation of the toxicity of those substances; (c) estimation of human exposure; (d) estimation of human intake or dose; and (e) risk characterization.

72. An assessment of the relative risks associated with alternative remedies for a Superfund site may include an evaluation of the risk to workers and other persons involved in implementing the remedy.

73. An assessment of the relative risks associated with alternative remedies may include an evaluation of the risks to off-site residents and off-site ecologic resources.

74. An assessment of the relative risks associated with alternative remedies for a Superfund site may consider local meteorological data to estimate off-site emission concentrations of hazardous substances.

75. Both quantitative and qualitative differences in short-term (implementation-related) and long-term (post-implementation) health and enviromental risks may be considered when comparing the relative risks of two alternative remedies for a Superfund site.

76. An assessment of the relative risks associated with alternative remedies for a Superfund site may include an estimate of the concentrations of contaminants and dusts and vapors that may be released into the ambient air surrounding the site during implementation of a remedy.

77. An assessment of the relative risks associated with alternative remedies for a Superfund site may include an estimate of the concentrations of hazardous substances that may, as a result of release of substances during implementation of a remedy, accumulate in foods grown or produced off-site.

78. A comparative evaluation of the risks presented by the remedies proposed by EPA and the HSC for the Hardage site using methods and models employed by

EPA would, *inter alia,* evaluate the same hazardous substances, the same exposure pathways, and employ the same quantitative methods of assessing off-site human exposures and health risks.

79. Implementation of a remedy at a Superfund site may pose health and occupational risks to workers and other persons involved in the response work.

80. The waste material in the Hardage site source areas contains heterogeneously mixed organic and inorganic compounds.

81. The total number of drums of waste in the barrel mound and the main pit at the Hardage site is estimated at 18,000 drums.

82. Substantial erosion of the Hardage site has occurred in the past, requiring interim remedial measures.

83. Erosion of the Hardage site enhances the likelihood of hazardous substances migrating off-site, as they are exposed to surface water run-off and wind.

84. Hazardous substances from the Hardage site may migrate off-site through several means, including groundwater, surface water run-off, and wind-blown vapors and dust.

85. Humans may be exposed to hazardous substances released at or from the Hardage site through several pathways, including dermal absorption, inhalation of vapors, inhalation of contaminated particles, ingestion of contaminated groundwater or surface water, and ingestion of contaminated fish, animals, cows' milk, or otherwise through the food chain.

86. Many of the hazardous substances detected at the Hardage site, and in the vicinity of the site, are known or suspected human carcinogens.

87. Approximately 114 persons in 30 dwellings reside within three miles of the Hardage site.

88. Substances disposed of at the Hardage site include ignitables, corrosives, toxic materials, and possibly reactive materials.

89. An assessment of the relative risks to workers and other persons involved in constructing alternative remedies for a Superfund site may consider the nature of specific response tasks and the number of man-hours required to complete each task.

90. Workers at a Superfund site who use protective clothing and equipment may be exposed to hazardous substances if seals between the face and the respirator are loose, if hazardous substances penetrate the protective clothing, if the protective clothing is not sealed properly, if the protective clothing tears from contact with sharp objects, or if the safety gear is improperly used or removed during contact with hazardous substances.

REMEDIAL ACTION—ARARS

91. The applicable or relevant and appropriate requirements pertinent to surface water quality criteria are:

(a) N. Criner Creek**:

[Except where noted below the following Oklahoma Water Quality Standards apply]. Dissolved oxygen concentration, § 7.3[a]; oil and grease, § 7.3[d]; toxicity to aquatic organisms, § 7.3[i]; agriculture, § 7.4; nutrients, § 7.10[b]; solids, § 7.10[c]; and taste (organoleptic compounds) and odor § 7.10[d].

**The following Oklahoma Water Quality Standards apply when the flow of North Criner Creek immediately up-stream of the discharge point is one (1) cfs or greater; Fish and Wildlife Propagation/Secondary Warm Water Fishing (7.3), Agriculture (7.4), Industrial and Municipal Process and Cooling Water (7.6), Secondary Body Contact Recreation (7.8), and Aestehtics (7.10).

(b) Criner Creek:

Public and Private Water Supply, § 7.1; Fish and Wildlife Propagation/Primary, Warm Water Fisheries, § 7.3; Agriculture, § 7.4; Industrial and Municipal Process and Cooling Water, § 7.6; Primary Body Contact Recreation, § 7.7; and Aesthetics, § 7.10.

92. The remedial alternatives, as described in the United States' Remedy Report filed October 13, 1989, any Record of Decision issued by EPA concerning the new proposed remedy, and the Hardage Steering Committee Defendants' Remedy Report filed October 13, 1989 in this action, do not violate the Resource Conservation and Recovery Act, 42 U.S.C. Sections 6901 *et seq.*, restrictions on the land disposal of hazardous wastes.

GEOLOGY/HYDROGEOLOGY

93. The Hardage site is immediately underlain entirely by Permian-aged sedimentary rocks in the Central Redbed Plains of Oklahoma; younger soils overlie the Perminan rocks over much of the site, and alluvial sedimentary deposits are found along North Criner Creek and in the southwest corner of the site.

94. Quaternary alluvium deposits are exposed at the south and southwest areas of the site adjacent to North Criner Creek, and attain a measured thickness of 50 to 60 feet at existing well locations.

95. The geological bedrock formations encountered at the Hardage site consist of sandstones, siltstones, and mudstones and combinations thereof.

96. Stratum I, the uppermost stratum group, is composed mainly of standstone and siltstone with some interbedded mudstone. Because the beds are relatively flat lying, Stratum I thins as surface elevation decreases and is completely absent from some boring samples in southern portions of the site.

97. Stratum I occurs at the site generally above an elevation of 1,090 feet (MSL); the thickness of Stratum I at the site ranges from 0 to about 40 feet.

98. Outcrops at the Hardage site to the west and southwest of the sludge drying building are Stratum I and consist of several cross-bedded, lenticular shaped sandstone bodies in horizontal and vertical contact with siltstone and very silty mudstone beds.

99. Stratum II is composed predominantly of mudstone and silty mudstone with occasional interbedded sandstone and siltstone layers.

100. Stratum II occurs at the site generally between the elevations of 1,090 feet (MSL) and 1,074 feet (MSL); the thickness of Stratum II ranges from about 16 to 29 feet.

101. Stratum III is composed predominantly of standstone, with varying amounts of interbedded siltstone and mudstone.

102. Stratum III occurs at the site generally between the elevations of 1,074 feet (MSL) and 1,040 feet (MSL); Stratum III ranges in thickness from about 35 to 42 feet.

103. Stratum IV is composed predominantly of mudstone and silty mudstone, with silty mudstone and siltstone layers present in the upper 20 feet.

104. Stratum IV occurs at the site generally between the elevations of 1,040 feet (MSL) and 960 feet (MSL); it has a thickness of between 76 and 84 feet.

105. Stratum V underlies Stratum IV between the elevations of about 960 feet (MSL) to 860 feet (MSL) and consists predominantly of interbedded mudstone and siltstone with lesser amounts of sandstone.

106. Stratum VI is found below an approximate elevation of 860 feet (MSL) and contains a relatively con-

tinuous zone of sandstone interbedded with lesser amounts of siltstone within the upper 50 feet.

107. Stratum VI contains saline ground water with concentrations of total dissolved solids in the 15,000 to 20,000 mg/l range.

108. Most surface runoff originating from the barrel mound, main pit, and sludge mound at the Hardage site flows to the southwest and enters the west farm pond, south pond, or the bar ditch southwest of the south pond, or North Criner Creek. A smaller portion flows eastward, discharging into the east farm ponds.

109. The surface runoff from the central portion of the Hardage site area is split into westerly and easterly flow components by the north-southridge line that runs through the center of the original site. Surface water runoff to the east flows toward the three east farm ponds while surface water runoff west of the ridge eventually flows into or around the south pond area into the southwest corner of the site toward North Criner Creek.

110. The ultimate destination of surface runoff and seepage water at the Hardage site is North Criner Creek.

111. Some of the surface runoff and seepage water infiltrates the sandstone near the surface in the southern portion of the site and seeps to the bar ditch or into the alluvium southwest of the site.

112. The alluvium within the southwest portion of the site consists of unconsolidated, laterally discontinuous, sand beds, and is underlain predominantly by stratum IV mudstone.

113. The horizontal hydraulic transmissivity of the alluvium ranges from approximately 10 gpd/ft to 4,050 gpd/ft.

GOVERNMENT RESPONSE COSTS

114. The Government's DOJ and EPA cost summaries submitted in support of the motion for partial summary

judgment on response cost issue identify invoices which are described on their faces as invoices for Hardage site work. The Government has paid these invoices. The summaries also identify additional invoices which are not described on their faces as specific to the Hardage site. The Government also has paid these invoices.

115. The Government has paid various of its employees the amounts shown on the summaries submitted in support of the motion for partial summary judgment on response cost issue for hours which employees charged on their time sheets to the Hardage case.

116. The Defendants do not dispute that the Government has paid various of its employees the amounts shown on the EPA cost summary attached to the declaration of Nellie Boone and the DOJ cost summary attached to the declaration of Patrick A. McGeehin submitted in support of the motion for partial summary judgment on response cost issues.

117. The indirect cost rates computed by EPA for EPA Region VI were $66 per hour in fiscal year 1983, $60 per hour in fiscal year 1984, $54 per hour in fiscal year 1985, $53 per hour in fiscal year 1986, $52 per hour in fiscal year 1987. The provisional rates for fiscal years 1988 and 1989 are: $52 per hour in fiscal year 1988, and $52 per hour in fiscal year 1989.

118. The number of site-specific hours billed to the Hardage site by EPA Region VI personnel in program divisions in the years 1983 through December 31, 1989 were: 1983, 587; 1984, 409; 1985, 1,105.5; 1986, 1,727.5; 1987, 1,817; 1988, 2468; 1989, 700.

HSC's COUNTERCLAIM FOR COST RECOVERY

119. The HSC's costs for which it seeks recovery have been summarized and recorded an accrual basis of accounting.

120. The HSC installed and has maintained a chain link fence and warning signs around the Hardage site in accordance with the Stipulation Regarding Installation and Maintenance of a Fence at the Hardage site between the United States and the HSC Defendants filed with the United States District Court for the Western District of Oklahoma on April 29, 1987 ("Fence Stipulation").

121. Installation of a fence to limit access to and provide security at a Superfund site constitutes a response action under CERCLA.

122. By letter dated January 28, 1988, the completed work pursuant to the fence stipulation has been approved by the Unted States. [Letter from Mary Ellen McClary to Steven M. Morgan, January 28, 1988].

123. The work performed by HSC Defendants pursuant to the Fence Stipulation is consistent with the National Contingency Plan.

124. The HSC constructed a water line to provide an alternative water supply to residents living near the Hardage site and has provided an alternative water supply to them.

125. Providing an alternative water supply constitutes a response action under CERCLA.

126. The HSC performed certain interim repairs of the soil cover over the Barrel Mound, pursuant to the stipulation Regarding Interim Repair and Maintenance of Hardage Site Source Area, which was filed with the Court on February 2, 1988 ("Repair Stipulation").

127. The HSC performed work at the site in accordance with the Work Plan attached to the Repair Stipulation.

128. The HSC's work pursuant to the Repair Stipulation constitutes a response action under CERCLA.

129. The HSC'S work pursuant to the Repair Stipulation is consistent with the National Contingency Plan.

130. The HSC performed a Remedial Investigation/Feasibility Study ("RI/FS") for the second operable unit at the Hardage site to determine the existence and extent of contamination at the site, to determine the existence and extent of any threat to public health or welfare or the environment posed by the migration of any contamination at the site, and to determine and evaluate alternatives for any appropriate remedial response actions necessary to address the second operable unit at the Hardage site.

131. The conduct of a remedial investigation/feasibility study is a response action under CERCLA.

132. The United States and the HSC Defendants entered into a Partial Consent Decree governing the performance of the Remedial Investigation/Feasibility Study for the second operable unit, which was entered by the Court.

133. The HSC has conducted a number of site investigations, studies, tests, and data-gathering efforts at the Hardage site.

VOLUMES

The HSC Defendants and the United States agree that the records maintained by Royal N. Hardage or his employees, the Oklahoma State Department of Health, and/or other PRPs list the following types of wastes as having been accepted for treatment, storage, and/or disposal at the Site:

(a) Acetone, 26,223 gallons;

(b) Acetone, epoxy, vinyl ester resins, 220 gallons;

(c) Acetone and gelcote (*sic*), 4,200 gallons;

(d) Acetone, toluene traces of acetic acid, 55 gallons;

(e) Acetone, trich, 300 gallons;

(f) Acetone, trichloroethane 1,1,1, alcohol kerosene, 2,800 gallons;

(g) Contaminated acetone, 15 gallons;

(h) Organic chemical laboratory cleaning waste, 2,450 gallons;

(i) Spent solvents, 34,430 gallons;

(j) Benzol & hyde carbon (*sic*), 700 gallons;

(k) Carbon tetrachloride, 7.5 gallons;

(*l*) Chlorinated benzene, 28,500 gallons;

(m) Chloroform solution, at least 300 gallons;

(n) Cyanide, 24,230 gallons;

(*o*) Cyanide solution, 275 gallons;

(p) Cyanide and water, 275 gallons;

(q) Cyanide, Chromium trioxide, bromine, analine, miscellaneous salts, 55 gallons;

(r) Copper cyanide, 155 gallons;

(s) Potassium cyanide, 11,125 gallons;

(t) Potassium ferricyanide, 0.125 gallons;

(u) Sodium cyanide, 715.125 gallons;

(v) Zinc/cyanide, 21,400 gallons;

(w) Etching [waste], chromic acid, cyanide, oil, paint, 3,575 gallons;

(x) Metallic sludge, 115,112.5 gallons;

(y) Plating sludge, 8,615 gallons;

(z) Spent plating sludge, 605 gallons;

(aa) Plating solution, 6,825 gallons;

(ab) Spent plating solution, 1,155 gallons;

(ac) Alkaline, etching and spent plating solution, and solvents, 1,835 gallons;

(ad) Acid, alkaline solution-water, etching, spent plating, oxidizing agent and oil solution, 1,120 gallons;

(ae) Zinc and brass plating sludge, 770 gallons;

(af) Zinc and copper plating sludge, 880 gallons;

(ag) Waste sludge, 4,345 gallons;

(ah) DDT, 2,130 gallons;

(ai) Dieldin (*sic*) and DDT, 330 gallons;

(aj) Dieldin (*sic*) and DDT, 330 gallons;

(ak) Methylene chloride, 1,500 gallons;

(al) Phenol, formic acid, methylene chloride, 8,600 gallons;

(am) Phenols, formic acid, methylene chloride, water, 800 gallons;

(an) Naphthalene, 4,000 gallons;

(ao) Caustic phenolic, 11,300 gallons;

(ap) Formic acid, phenol, 3,500 gallons;

(aq) Miscellaneous solid waste, 4,620 gallons;

(ar) NaOH/Phenols sludge, 6,000 gallons;

(as) Phenol, formic acid, methylene 9,400 gallons;

(at) Phenolic and caustic waste water, 5,800 gallons;

(au) Phenolic glue waste, 12,000 gallons;

(av) Phenolic resins, 6,000 gallons;

(aw) Phenolic sand resin, 1,650 gallons;

(ax) Phenolic waste water (glue), 6,000 gallons;

(ay) Phenols, 23,559 gallons;

(az) Askarel-contaminated cloth, 165 gallons;

(ba) Askarel oils, 2,500 gallons;

(bb) Askarel oil-soaked rags and seven transformers, 300 gallons;

(bc) Askarel rags, 2 gallons;

(bd) Askerel (*sic*), 605 gallons;

(be) Askerel (*sic*) (transformer oil), 715 gallons;

(bf) Askerel (*sic*) cort capacitors, 8,600 gallons;

(bg) Capacitors, 7,100 gallons;

(bh) Capacitors/transformers, 18,400 gallons;

(bi) Chlorinated (*sic*) byphenal (*sic*), 5,250 gallons;

(bj) Contaminated capacitors, 18,000 gallons;

(bk) PBB (*sic*), 7,200 gallons;

(bl) PSBs, 500 gallons;

(bm) PCB-contaminated capacitors, 5,400 gallons;

(bn) PCB-drained capacitors, 9,000 gallons; 3,750 gallons, and 1,200 gallons;

(bo) Transformer oil (PCB), 770 gallons;

(bp) Styrene, 630,979 gallons;

(bq) Perchloroethylene, alcohol, oil and grease, 22,400 gallons;

(br) Acid sludge, 68,804 gallons;

(bs) Paint sludge, 21,805 gallons;

(bt) Paint sludge, 41,580 gallons;

(bu) Toluene, 1,035 gallons;

(bv) Toluene/hydrocarbon mix, at least 677 gallons;

(bw) Toluol, 1,000 gallons;

(bx) Coppertox, 4,300 gallons;

(by) Toxaphene, 191,360 gallons;

(bz) Toxiphine (sic), 10,700 gallons;

(ca) Acetone, trich., 300 gallons;

(cb) Chlorothane (*sic*) VG, 935 gallons;

(cc) Chlorothan (*sic*) VG, 150 gallons;

(cd) Chlorothane (*sic*), 935 gallons;

(ce) Chlorothane (*sic*) VG, 2,625 gallons;

(cf) Chlorothene VG, 4,450 gallons;

(cg) Chlorothine (*sic*) VG, 400 gallons;

(ch) Chlorthane (*sic*), 1,000 gallons;

(ci) Chlorthane (*sic*) VG, 3,700 gallons;

(cj) Oil, chloroethane (*sic*) VG, caustic soda, Stoddard solvent, chromic acid, muratic acid and lacquer thinner, 11,500 gallons;

(ck) Oil, solvents, master draw, water, trichloroethane, 3,000 gallons;

(cl) Oil-water-trichlorethane, 3,200 gallons;

(cm) Organic chemical laboratory cleaning waste, 2,450 gallons;

(cn) Organic trichlorethane, 300 gallons;

(co) Paint sludge, trichloro, sand, water, 1,500 gallons;

(cp) Trichloetane (*sic*), methal cloroform, 200 gallons;

(cq) Trichlorethane (*sic*) and sludge, 1,320 gallons;

(cr) Trichloro and water, 500 gallons;

(cs) Trichloro, drawing oil, water, 3,000 gallons;

(ct) Trichloroethane 1,1,1, acetone, alcohol, kerosene,

(cu) Trichloroethane, 7,255 gallons;

(cv) Trichloroethane with water and oil, 1,800 gallons;

(cw) Freon and coolant oil, 165 gallons;

(cx) Soldering flux and freon, 165 gallons;

(cy) Phosphate and triclorethyne, 110 gallons;

(cz) Trichlorethelene, solvents, caustic water and oils, 10,285 gallons;

(da) Trichloroethelene glicall, 2,000 gallons;

(db) Trichloroethylene in silicon carbide, 275 gallons;

(dc) Trichloroethlyene and aluminum paste, 1,815 gallons;

(dd) Tri Chlor, 200 gallons;

(de) Water and xylol solvent, 4,500 gallons;

(df) Paint sludge, 3,515 gallons;

(dg) Coolant water, paint thinner, contaminated waste oil, 800 gallons;

(dh) Dry paint, 125 gallons;

(di) Junk solvent paint, 17,820 gallons;

(dj) Oil base paint, 18,580 gallons;

(dk) Oil solvent, and paint thinner sludge, 420 gallons;

(dl) Paint, 273,690 gallons;

(dm) Paint/acid, 61,900 gallons;

(dn) Paint and mild acid sludge, 91,000 gallons;

(do) Paint and solvent, 26,600 gallons;

(dp) Paint and thinner, 87,900 gallons;

(dq) Paint epoxy, 6,700 gallons;

(dr) Paint, oil, acid, 2,000 gallons;

(ds) Paint residue, 882 gallons;

(dt) Paint residue and epoxy, 10,010 gallons;

(du) Paint, residue, and epoxy waste, 4,510 gallons;

(dv) Paint residue and solvent, 882 gallons;

(dw) Paint rosin, 2,695 gallons;

(dx) Paint sludge, 1,359,672 gallons;

(dy) Paint sludge and solvents, 5,500 gallons;

(dz) Paint sludge and water, 1,500 gallons;

(ea) Paint sludge, mud, 2,000 gallons;

(eb) Paint sludge, process acid sludge, 55 gallons;

(ec) Paint sludge, thinner, misc., 8,715 gallons;

(ed) Paint sludge, water, acid, 2,500 gallons;

(ee) Paint, solvent, collagen, 10,000 gallons;

(ef) Paint, solvent, ink, oil, coolant, 69,140 gallons;

(eg) Paint solvents, 4,400 gallons;

(eh) Paint, solvents and paint booth sludge, 4,500 gallons;

(ei) Paint strip and parts cleaner, 1,000 gallons;

(ej) Paint stripper and sludge, 400 gallons;

(ek) Paints, 308,760 gallons;

(el) Paints, solvents, paint booth sludge and other, 7,250 gallons;

(em) Paint waste, 28,860 gallons;

(en) Sludge paint, 5,920 gallons;

(eo) Solvent paint, 32,200 gallons;

(ep) Waste paint residue, 8,580 gallons;

(eq) Waste paint residues and oil for disposal, 5,005 gallons;

(er) Waste paint sludge, 2,200 gallons;

(es) Waste base paint sludge, 11,400 gallons;

(et) Aluminum Sludge 3,750 gallons;

(eu) Chromic 11,300 gallons;

(ev) Chromic 2,950 gallons;

(ew) Zinc/Skimmings 3,500 gallons;

(ex) Zinc/Skimmings 1,400 gallons;

(ey) Zinc/Cyanide 6,000 gallons;

(ez) Zinc Sludge 4,000 gallons;

(fa) Zinc Sludge 4,040 gallons;

(fb) Zinc Sludge 495 gallons;

(fc) Zinc Chromic 5,200 gallons;

(fd) Plat Sludge 350 gallons;

(fe) Plat Sludge 1320 gallons;

(ff) Plat Sludge 5200 gallons;

(fg) Plat Sludge 6000 gallons;

(fh) Plat Sludge 880 gallons;

(fi) Plat Sludge 800 gallons;

(fj) Plat Sludge 6000 gallons;

(fk) Plat Sludge 330 gallons;

(fl) Plat Sludge 3000 gallons;

(fm) Plat Sludge 3030 gallons;

(fn) Plat Sludge 1650 gallons;

(fo) Asbestos 3,350 gallons;

(fp) Asbestos 1,010 gallons;

(fq) Asbestos 6,000 gallons;

(fr) Asbestos 3,250 gallons;

(fs) Asbestos 5,050 gallons;

(ft) Asbestos 3,232 gallons;

(fu) Asbestos 2,828 gallons;

(fv) Asbestos 5,303 gallons;

(fw) Asbestos 3,600 gallons;

(fx) Asbestos 3,000 gallons;

(fy) Asbestos 3,030 gallons;

(fz) Asbestos 6,000 gallons;

(ga) Asbestos 3,000 gallons;

(gb) Asbestos 4,565 gallons;

(gc) Asbestos 1,010 gallons;

(gd) Asbestos 1,212 gallons;

(ge) Asbestos 7,070 gallons;

(gf) Asbestos 1,818 gallons;

(gg) Asbestos 3,090 gallons;

(gh) Asbestos 2,020 gallons;

(gi) Asbestos 5,400 gallons;

(gj) Asbestos 1,200 gallons;

(gk) Asbestos 7,000 gallons;

(gl) Asbestos 1,414 gallons;

(gm) Asbestos 7,070 gallons;

(gn) Asbestos 4,600 gallons;

(go) Asbestos 1,616 gallons;

(gp) Met. Sludge 7,440 gallons;

(gq) Met. Sludge 6,300 gallons;

(gr) Met. Sludge 3,030 gallons;

(gs) Met. Sludge 3,434 gallons;

(gt) Met. Sludge 2,020 gallons;

(gu) Met. Sludge 4,040 gallons;

(gv) Met. Sludge 18,200 gallons;

(gw) Met. Sludge 7,000 gallons;

(gx) Met. Sludge 4,000 gallons;

(gy) Met. Sludge 4,550 gallons;

(gz) Met. Sludge 2,800 gallons;

(ha) Met. Sludge 2,000 gallons;

(hb) Met. Sludge 48,000 gallons;

(hc) Met. Sludge 14,900 gallons;

(hd) Met. Sludge 4,000 gallons;

(he) Met. Sludge 57,600 gallons;

(hf) Met. Sludge 4,900 gallons;

(hg) Met. Sludge 14,400 gallons;

(hh) Met. Sludge 8,800 gallons;

(hi) Met. Sludge 3,950 gallons;

(hj) Met. Sludge 9,050 gallons;

(hk) Met. Sludge 12,600 gallons;

(hl) Met. Sludge 3,950 gallons;

(hm) Met. Sludge 7,200 gallons;

(hn) Met. Sludge 3,000 gallons;

(ho) Met. Sludge 3,200 gallons;

(hp) Met. Sludge 26,200 gallons;

(hq) Met. Sludge 4,044 gallons;

(hr) Met. Sludge 4,800 gallons;

(hs) Met. Sludge 31,200 gallons;

(ht) Met. Sludge 12,600 gallons;

(hu) Met. Sludge 53,700 gallons;

(hv) Met. Sludge 4,500 gallons;

(hw) Met. Sludge 28,281 gallons;

(hx) Met. Sludge 2,000 gallons;

(hy) Met. Sludge 27,400 gallons;

(hz) Met. Sludge 4,000 gallons;

(ia) Met. Sludge 11,600 gallons;

(ib) Met. Sludge 37,766 gallons;

(ic) Met. Sludge 4,500 gallons;

(id) Met. Sludge 18,200 gallons;

(ie) Met. Sludge 2,050 gallons;

(if) Met. Sludge 1,350 gallons;

(ig) Met. Sludge 3,636 gallons;

(ih) Met. Sludge 41,300 gallons;

(ii) Met. Sludge 9,100 gallons;

(ij) Met. Sludge 11,550 gallons;

(ik) Met. Sludge 2,000 gallons;

(il) Met. Sludge 3,750 gallons;

(im) Met. Sludge 4,550 gallons;

(in) Met. Sludge 6,200 gallons;

(io) Met. Sludge 16,160 gallons;

(ip) Met. Sludge 12,000 gallons;

(iq) Met. Sludge 12,000 gallons;

(ir) Met. Sludge 5,400 gallons;

(is) Met. Sludge 12,600 gallons;

(it) Met. Sludge 1,500 gallons;

(iu) Met. Sludge 10,000 gallons;

(iv) Met. Sludge 1,300 gallons;

(iw) Met. Sludge 9,000 gallons;

(ix) Met. Sludge 7,700 gallons;

(iy) Met. Sludge 25,000 gallons;

(iz) Met. Sludge 28,800 gallons;

(ja) Met. Sludge 9,600 gallons;

(jb) Met. Sludge 23,500 gallons;

(jc) Met. Sludge 28,600 gallons;

(jd) Met. Sludge 7,000 gallons;

(je) Met. Sludge 41,800 gallons;

(jf) Met. Sludge 44,500 gallons;

(jg) Met. Sludge 9,800 gallons;

(jh) Met. Sludge 46,500 gallons;

(ji) Met. Sludge 8,000 gallons;

Respectfully submitted,

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EXHIBIT C

SUPPLEMENTAL JOINT STIPULATION

Filed Nov. 22, 1989

COME NOW the plaintiff and the defendants, pursuant to the court's pretrial scheduling order of January 20, 1989, as modified on July 27, 1989, and file the following stipulation:

The United States and the Hardage Steering Committee Defendants stipulate that neither will offer for admission into evidence, nor discuss or refer to in Phase I of the trial, information concerning the nature of the wastes sent to the Hardage Site by either of them for any reason other than as relevant to risk or choice of remedy. The United States and the Hardage Steering Committee Defendants agree that neither the nature of the wastes, nor the waste handling or generation practices of either of them are factors relevant to determining the appropriate contribution share of the United States because of the generation of hazardous materials by the federal facilities. "Nature of the wastes" for purposes of this stipulation includes, without being limited to, the following matters: chemical composition, toxicity, mobility, flammability, reactivity, or any other physical or chemical characteristic of the substance. Nothing in this stipulation shall prejudice the Hardage Steering Committee Defendants' right to offer evidence or make any arguments it deems appropriate concerning any other aspect of the United States' conduct, including but not limited to EPA's conduct, to determine the share of responsibility, if any, that ought to be assigned to the United States for any and all costs and liabilities incurred in connection with the Hardage Site.

Respectfully submitted,

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EXHIBIT D

STIPULATION REGARDING ANALYTICAL DATA: SAMPLES ON WHICH THE PARTIES AGREE

Filed Nov. 17, 1989

The Plaintiff in this action, the United States of America,[1] on behalf of the administrator of the United States Environmental Protection Agency ("EPA"), and the Defendants [2] stipulate to the following:

1. There have been approximately 1,480 samples taken by the parties from the Hardage site [3] and analyzed by various laboratories. A substantial amount of the data associated with these samples has been reviewed and validated. Both sides have designated experts who have conducted a quality assurance/quality control ("QA/QC") review of the data generated from samples taken at the Hardage site.

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[1] The United States of America, including without limitation, all of its departments, agencies and other related entities, and in all its capacities, is hereinafter referred to as "Plaintiff".

[2] Advance Chemical Distribution, Inc.; Allied-Signal, Inc.; Atlantic Richfield Company; Ashland Oil, Inc.; AT & T Technologies, Inc.; Borg-Warner Corporation; Cato Oil and Grease Company; Exxon Corporation; The Firestone Tire & Rubber Company; GenCorp, Inc.; Honeywell Bull, Inc.; Kerr-McGee Refining Corporation; Magnetic Peripherals, Inc.; Maremont Corporation; McDonnell-Douglas Corporation; Mobil Chemical Corporation; Nalco Chemical Company; Oklahoma Gas and Electric Company; Oklahoma Publishing Company; Rockwell International Corporation; Texaco Inc.; Texas Instruments Incorporated; Uniroyal, Inc.; UOP, Inc.; Westinghouse Electric Corporation; Weyerhaeuser Company; Powell Sanitation Services, Inc.; and United States Pollution Control, Inc. are hereinafter referred to as "Defendants".

[3] Site, for purposes of this Stipulation, means the SW¼, Section 24, Township 6 North, Range 4 West, McClain County, Oklahoma and all areas adjacent thereto from which samples were collected by the parties.

2. Samples taken by the Oklahoma State Department of Health are not covered by or included in this Stipulation.

3. The Plaintiff and Defendants have developed a "universe list" containing all of the samples obtained from the site sampling activities of the parties. The universe list is broken down into five categories: First Operable Unit Organic Data ("Attachment A"), First Operable Unit Inorganic Data ("Attachment B"), First Operable Unit Geochemistry Data ("Attachment C"), Second Operable Unit Data ("Attachment D") and First Operable Unit Field Data ("Attachment E").

4. The results of the QA/QC review of the laboratory performance in analyzing the samples contained in the universe list are accurately reported in Attachments "A," "B," "C" and "D" respectively. The results of a QA/QC review of the field procedures and associated methods in collecting, handling and shipping the samples contained on the universe list are reported in Attachment "E" for the First Operable Unit Data and in Attachment "D" for the Second Operable Unit Data. These results are classified by the experts as either quantitative ("QN"), qualitative ("QL") or not usable ("NU").

5. The parties agree that no evidentiary objections pertaining to proper foundation will be made with respect to the samples listed in Attachments "A", "B", "C", "D" and "E" and that the issues associated with "chain of custody" will not be contested at trial with respect to the samples identified in Attachments "A", "B", "C", "D" and "E".

6. As used in Attachments "A", "B" and "C" and the Laboratory Quality Section of "D" of this Stipulation, "quantitative" means the reported results accurately reflect the absence or presence *and* concentration of the specific chemical compounds analyzed for in the sample as received at the laboratory.

As used in Attachments "A", "B" and "C" and the Laboratory Quality Section of "D" of this Stipulation, "qualitative" means, except as stated below, that the reported positive analytical results reflect the presence of the specific chemical compounds analyzed for in the sample as received at the laboratory; however, the concentration of the specific chemical compounds cannot accurately be determined. Also, specific chemical compounds reported as absent may actually have been present in the sample as collected. Additional professional judgment is required of the user of the reported analytical results in assessing whether a common laboratory contaminant reported at a concentration of less than 10 times the detection limit may actually be present in the matrix at the time and location from which the sample was collected.

7. As used in Attachment "E" and in the Field Quality Section of Attachment "D" of this Stipulation, "quantitative" means that the documentation, well construction (where applicable) and field procedures followed in collecting and shipping to the laboratory a sample from a particular location and time were adequate for the sample as received at the laboratory to accurately reflect the absence or presence and concentration of the specific compounds in the matrix at the time and location from which the sample was collected.

As used in Attachment "E" and the Field Quality Section of Attachment "D" of this Stipulation, "qualitative" means that the documentation, well construction (where applicable) and field procedures followed in collecting, handling and shipping to the laboratory a sample from a particular location and time were adequate for the sample as received at the laboratory to reflect the presence of specific compounds in the matrix at the time and location from which the sample was collected; however, the concentration of the specific compounds cannot accurately be determined. Also, specific chemical compounds reported as absent may actually be present.

Additional professional judgment is required of the user of the reported analytical results in assessing whether a field contaminant(s) may actually be present in the matrix at the time the sample was received at the laboratory.

8. With respect to sample results which are identified in Attachments "A" through "E" as "qualitative", the parties reserve the right to assert that the actual concentration of a compound reported as present in the matrix from which the sample was taken is equal to, greater than, or less than the result reported for that compound.

9. As used above, and in Attachments "A", "B", "C", "D" and "E" of this Stipulation, "not usable" means that the field documents and/or field procedures and/or the laboratory analysis are not reliable for technical or analytical purposes.

10. The parties agree that this Stipulation is also offered for the purpose of satisfying Task *1* of the Second Operable Unit *Management of Migration Remedial Investigation/Feasibility Study Work Plan,* dated May 8, 1987, pursuant to the *Partial Consent Decree* (Section XV, paragraph *2,* Milestone *B*): *Performance of a Remedial Investigation/Feasibility Study* entered February 20, 1989 by Order Nunc Pro Tunc.

11. The Plaintiff and Defendants reserve the right to supplement the Attachments to the Stipulation with additional data which have been reviewed and agreed upon with respect to the classifications.

12. The HSC Defendants' experts have reviewed additional data that EPA has chose not to have its experts review. This data is identified in documents called, *Inorganic Analyses 9/5/89 Review/Validation,* "HSC Opinion Only List" and *Organic Analysis, 10/29/89, Data Review/Validation,* "HSC Opinions Only". The EPA has agreed not to render opinions by and through its witnesses about the quality or reliability of data on

these lists. These lists are attached to this Stipulation as Attachments "F" and "G".

Respectfully submitted,

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EXHIBIT E

STIPULATION REGARDING ANALYTICAL DATA: SAMPLES ON WHICH THE PARTIES DISAGREE

Filed Nov. 17, 1989

The Plaintiff in this action, the United States of America [1], on behalf of the administrator of the United States Environmental Protection Agency ("EPA"), and the Defendants [2] stipulate to the following:

1. There have been approximately 1,480 samples taken by the parties from the Hardage site [3] and analyzed by various laboratories. A substantial amount of the data associated with these samples has been reviewed and validated. Both sides have designated experts who have conducted a quality assurance/quality control ("QA/QC") review of the data generated from samples taken at the Hardage site. Both sides have also conducted independent reviews of the field procedures and/or

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[1] The United States of America, including without limitation, all of its departments, agencies and other related entities, and in all its capacities, is hereinafter referred to as "Plaintiff".

[2] Advance Chemical Distribution, Inc.; Allied-Signal, Inc.; Atlantic Richfield Company; Ashland Oil, Inc.; AT & T Technologies, Inc.; Borg-Warner Corporation; Cato Oil and Grease Company; Exxon Corporation; The Firestone Tire & Rubber Company; GenCorp, Inc.; Honeywell Bull, Inc.; Kerr-McGee Refining Corporation; Magnetic Peripherals, Inc.; Maremont Corporation; McDonnell-Douglas Corporation; Mobil Chemical Corporation; Nalco Chemical Company; Oklahoma Gas and Electric Company; Oklahoma Publishing Company; Rockwell International Corporation; Texaco Inc.; Texas Instruments Incorporated; Uniroyal, Inc., UOP, Inc.; Westinghouse Electric Corporation; Weyerhaeuser Company; Powell Sanitation Services, Inc.; and United States Pollution Control, Inc. are hereinafter referred to as "Defendants".

[3] Site, for purposes of this Stipulation, means the SW¼, Section 24, Township 6 North, Range 4 West, McClain County, Oklahoma and all areas adjacent thereto from which samples were collected by the parties.

methods used to take the samples as well as the construction of the wells from which the samples were taken.

2. The parties have entered into a separate stipulation, STIPULATION REGARDING ANALYTICAL DATA: SAMPLES ON WHICH THE PARTIES AGREE, setting forth the samples taken from the Hardage site on which they agree as to the laboratory and/or field quality of the samples.

3. The purpose of this Stipulation is to identify the samples taken from the Hardage site on which the parties disagree as to the reliability and usability of the samples and for which trial testimony may be offered. Attachment "A" sets forth the samples taken from the Hardage site on which the parties disagree as to the reliability and usability of the laboratory analysis. Attachment "B" sets forth the samples taken from the Hardage site on which the parties disagree as to the reliability and usability of the field procedures and/or methods, including but not limited to, field sampling, well construction, and other field data gathering issues. Attachment "B" includes both First Operable Unit Samples and Second Operable Unit Samples.

4. The parties may raise any issues with respect to the samples listed in Attachments "A" and "B" of this Stipulation, except for issues relating to "chain of custody".

5. With respect to samples listed in Attachment "B" of this Stipulation, the parties intend to enter into negotiations to reach agreement on the quality of the field procedures and/or methods used to take the samples and the construction of the wells from which the samples were taken. If such negotiations are successful, the parties anticipate including these samples on Attachment "D" or "E" to the Stipulation Regarding Analytical Data: Samples On Which The Parties Agree.

Respectfully submitted,

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APPENDIX D

UNITED STATES DISTRICT COURT
W.D. OKLAHOMA

No. CIV-86-1401-P

UNITED STATES OF AMERICA,
Plaintiff,

v.

ROYAL N. HARDAGE, *et al.*,
Defendants.

ADVANCE CHEMICAL COMPANY, *et al.*,
HARDAGE STEERING COMMITTEE,
Defendant and Third-Party Plaintiffs,

v.

ABCO, INC., *et al.*,
Third-Party Defendants.

Dec. 8, 1989

John R. Barker, Sr. Counsel, Environmental Enforcement Section, U.S. Dept. of Justice, Anna L. Wolgast, Steven Novick, Washington, D.C., for U.S.

Charles DeSaillan, Washington, D.C., for EPA.

Kenneth N. McKinney, Robert D. Tomlinson, Mark D. Coldiron, Oklahoma City, Okl., Amanda Birrell, Austin, Tex., Karl Bourdeau, Tom Richichi, Washington,

D.C., Bruce H. Brubaker, Fairlawn, Ohio, Pamela J. Cissik, Morristown, N.J., Stephen Fink, James C. Morriss, III, Dallas, Tex., Allan Gates, Little Rock, Ark., Michael D. Graves, Tulsa, Okl., Walter J. Hryszko, Houston, Tex., Jay Johnson, Dallas, Tex., Jeffrey N. Martin, Washington, D.C., David C. Minc, Akron, Ohio, Tim Olsen, Tulsa, Okl., Howard Seitzman, Austin, Tex., Charles W. Shipley, Blake Champlin, Tulsa, Okl., Elizabeth M. Weaver, Los Angeles, Cal., Jerome T. Wolf, Carl Helmstetter, Kansas City, Mo., for Hardage Steering Committee.

Andrew M. Coats, Barbara Hoffman, Oklahoma City, Okl., Eva M. Fromm, Houston, Tex., Joseph F. Guida, Jean McLemore, Steve McKinney, Oklahoma City, Okl., Calvin Sawyier, Chicago, Ill., Harry R. Palmer, Jr., Kirk W. Koester, Oklahoma City, Okl., Jim Smith, John D. White, Doug Craig, Gerald Schulke, Steve LeSatz, Houston, Tex., Irwin H. Steinhorn, Oklahoma City, Okl., J. Kemper Will, Englewood, Colo., on-Hardage Steering Committee.

PHILLIPS, District Judge.

Before the Court is the plaintiff United States' motion for partial summary judgment on response costs filed September 11, 1989. The United States seeks summary judgment against each of the defendants on the issue of their liability under Section 107(a)(4)(A) of CERCLA [1], 42 U.S.C. § 9607(a)(4)(A), for response costs incurred by the United States in conjunction with the Hardage site. The amount of response costs requested by the United States in this motion for partial summary judgment is $6,292,065.25. In addition, the United States also seeks a declaration that the defendants are liable for the United States' future response costs at the Hardage site. Six individual defendants or groups of

[1] Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA"), 42 U.S.C. §§ 9601-75.

defendants responded in opposition.[2] With this Court's approval, the United States filed a joint reply to all the responses on November 6, 1989. For the reasons set forth below, the United States' motion for partial summary judgment for response costs is GRANTED, with the exception of the request for indirect costs of the Department of Justice ("DOJ"), against defendants who have stipulated to liability or been found liable.[3] In ad-

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[2] The Hardage Steering Committee defendants ("HSC") responded in opposition on October 20, 1989. L & S Bearing Company ("L & S Bearing") responded in opposition on October 18, 1989 and adopted and incorporated by reference HSC's response and statement of material facts as to which a genuine issue exists.

Oklahoma National Stock Yards ("Stock Yards") responded in opposition on October 6, 1989. Stock Yards indicates the liability issues underlying the United States' statement of material fact are already before the Court in motions for summary judgment as to liability previously filed by Stock Yards and the United States, This Court denied Stock Yards' motion for summary judgment on November 9, 1989. On May 10, 1989, Stock Yards and United States filed a stipulation on issues relating to liability, however, there has been no final finding of liability as to Stock Yards.

CATO Oil and Grease Company ("CATO") responded in opposition on October 5, 1989. CATO cites to its pending motion for summary judgment on CERCLA's constitutionality to argue this Court should deny the United States' motion for partial summary judgment on response costs or postpone ruling on the government's motion until CATO's motion is decided. This Court denied CATO's motion for summary judgment on November 28, 1989.

U.S. Pollution Control, Inc. ("USPCI") opposed the United States' motion on October 6, 1989 stating USPCI has a pending motion for summary judgment based upon its status as a common carrier. This Court denied USPCI's motion for summary judgment on October 3, 1989. However, USPCI has strongly defended against the United States' motion for partial summary judgment on USPCI's liability which is still pending.

JOC Oil Exploration Company, Inc. ("JOC") filed a motion in opposition on September 27, 1989. JOC argues there has been no finding of liability against JOC, therefore JOC cannot be found liable for the United States' response costs.

[3] Certain of the defendants, including but not limited to CATO, USPCI, JOC, Stock Yards, and Rockwell International have not

dition, the United States' request for a declaratory judgment finding the defendants liable for the United States' future response costs is also GRANTED against these same defendants, with the exception of the indirect costs of DOJ.[4]

I. STANDARD FOR SUMMARY JUDGMENT

The facts presented to the court upon a motion for summary judgment must be construed in a light most favorable to the nonmoving party. *Board of Educ. v. Pico*, 457 U.S. 853, 864, 102 S.Ct. 2799, 2806, 73 L.Ed.2d 435 (1982); *United States v. Diebold, Inc*, 369 U.S. 654, 82 S.Ct. 993, 8 L.Ed.2d 176 (1962). If there can be but one reasonable conclusion as to the material facts, summary judgment is appropriate. Only genuine disputes over facts which might affect the outcome of the suit under the governing law will properly preclude the entry of summary judgment. *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 106 S.Ct. 2505, 91 L.Ed.2d 202 (1986). Finally, the movant must show entitlement to judgment as a matter of law. *Ellis v. El Paso Natural Gas Co.*, 754 F.2d 884, 885 (10th Cir. 1985); Fed.R.Civ. P. 56(c).

Although the Court must view the facts and inferences to be drawn from the record in the light most favorable to the nonmoving party, "even under this standard there are cases where the evidence is so weak that the case does not raise a genuine issue of fact." *Burnette v. Dow Chem. Co.*, 849 F.2d 1269, 1273 (10th Cir.1988). As stated by the Supreme Court, "[s]ummary judgment procedure is properly regarded not as a disfavored procedural shortcut, but rather as an integral part of the Fed-

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stipulated to liability nor been found liable under sections 106(a) & 107(a) of CERCLA, 42 U.S.C. §§ 9606(a) & 9607(a). Should these defendants be found liable in the future, they would also be jointly and severally liable for these response costs.

[4] See footnote 3.

eral Rules as a whole, which are designed 'to secure the just, speedy and inexpensive determination of every action.'" *Celotex Corp. v. Catrett*, 477 U.S. 317, 327, 106 S.Ct. 2548, 2555, 91 L.Ed.2d 265 (1986) (quoting Fed.R.Civ.P. 1).

The Supreme Court articulated the standard to be used in summary judgment cases, emphasizing the "requirement is that there be no *genuine* issue of *material* fact." *Anderson v. Liberty Lobby, Inc.*, 477 U.S. at 248, 106 S.Ct. at 2510 (emphasis in original). A dispute is "genuine" "if a reasonable jury could return a verdict for the nonmoving party." *Id.* at 248, 106 S.Ct. at 2510. The Court stated that the question is "whether the evidence presents a sufficient disagreement to require submission to a jury or whether it is so one-sided that one party must prevail as a matter of law." *Id.* at 251-52, 106 S.Ct. at 2512. "The mere existence of a scintilla of evidence in support of the [party's] position will be insufficient; there must be evidence on which the jury could reasonably find for the [party]." *Id.* at 252, 106 S.Ct. at 2512. "The very mission of the summary judgment procedure is to pierce the pleadings and to assess the proof in order to see whether there is a genuine need for trial." *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 587, 106 S.Ct. 1348, 1356, 89 L.Ed.2d 538 (1986) (quoting Advisory Committee Note to Fed.R.Civ.P. 56(e)).

The Court determines whether the nonmovant has submitted evidence of the essential elements of the claim by viewing "the evidence presented through the prism of the substantive evidentiary burden" so that a reasonable fact-finder could find for the nonmovant. *Anderson v. Liberty Lobby, Inc.*, 477 U.S. at 254, 106 S.Ct. at 2513. The Court is only required to draw reasonable inferences from the evidence. *See Lucas v. Dover Corp., Norris Div.*, 857 F.2d 1397, 1400 (10th Cir.1988) (J.N.O.V. standard). Implausible inferences can be rejected. *Cf. Matsushita Elec. Indus. Co. v. Zeneth Radio Corp.*, 475

U.S. at 585-598, 106 S.Ct. at 1355-1362 (rejecting implausible inference of intent in antitrust conspiracy).

A party resisting a motion for summary judgment must do more than make conclusionary allegations, it "must set forth facts showing that there is a genuine issue for trial." Fed.R.Civ.P. 56(e); *Dart Indus. v. Plunkett Co. of Okla., Inc.*, 704 F.2d 496, 498 (10th Cir. 1983); *see Lake Hefner Open Space Alliance v. Dole*, 871 F.2d 943, 945-46 (10th Cir.1989) (Plaintiff did not "by affidavits or as otherwise . . . set forth specific facts showing that there is a genuine issue for trial."). The Court will not grant summary judgment based on a battle of affidavits that raise genuine material disputes. *De Vargas v. Mason & Hanger-Silas Mason Co.*, 844 F.2d 714, 719 (10th Cir.1988). However, affidavits must be submitted in good faith. Fed.R.Civ.P. 56(g). And, conclusionary affidavits are insufficient to defeat summary judgment. *Luckett v. Bethlehem Steel Corp.*, 618 F.2d 1373, 1380 & n. 7 (10th Cir.1980). Conclusionary opinion of experts that fail to provide specific facts are insufficient as well. *Evers v. General Motors Corp.*, 770 F.2d 984, 986-87 (11th Cir.1985).

II. UNDISPUTED FACTS

Rule 14(B) of the Western District of Oklahoma provides a framework for determining undisputed facts at the summary judgment stage. The Rule provides:

> The brief in support of a motion for summary judgment (or partial summary judgment) shall begin with a section that contains a concise statement of material facts as to which movant contends no genuine issue exists. The facts shall be numbered and shall refer with particularity to those portions of the record upon which movant relies. The brief in opposition to a motion for summary judgment (or partial summary judgment) shall begin with a section which contains a concise statement of ma-

terial facts as to which the party contends a genuine issue exists. Each fact in dispute shall be numbered, shall refer with particularity to those portions of the record upon which the opposing party relies, and, if applicable, shall state the number of the movant's fact that is disputed. All material facts set forth in the statement of the movant shall be deemed admitted for the purpose of summary judgment unless specifically controverted by the statement of the opposing party.

W.D.Okla.R. 14(B).

An analysis of the United States' motion and reply and the responses of HSC, L & S Bearing by reference, Stock Yards, and USPCI reveal the following facts are undisputed within the meaning of Rule 14(B) for the purposes of this motion only. Fed.R.Civ.P. 56(e); W.D. Okla.R. 14(B).

1. Hazardous substances are located at the Hardage site.[5]

2. Hazardus substances have been released from the Hardage site into the soil and groundwater at, around, and beneath the Hardage site.[6]

3. Hadarzous substances from the Hardage site have migrated from the site and have contaminated or threaten to contaminate the Criner Creek/North Criner Creek alluvial aquifer.

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[5] The United States' statement of material facts as to which there is no geninue issue contains 33 undisputed facts. Facts nos. 30 and 31 relate to indirect costs of response activities performed by DOJ personnel at the Hardage site and the amount of those costs. Because the Court finds genuine issues of materials fact as to United States' listed facts 30 and 31, these two facts are not included in the Court's statement of undisputed facts, and the Court's undisputed facts have been renumbered.

[6] Stock Yards stipulated to undisputed facts no. 1, 2, and 5 in its stipulation on issues relating to liability on May 10, 1989.

4. The hazardous substances at the Hardage site are commingled.[7]

5. Each of the defendants to this action is an owner or operator of the Hardage site, a person who disposed of or arranged for the disposal of hazardous substances at the Hardage site, or a person who transported hazardous substances to the Hardage site for disposal and selected the Hardage site as the site for disposal of such hazardous substances.[8]

6. Environmental Protection Agency ("EPA") Headquarters' employees performed response activities at the Hardage site.[9]

7. The United States has incurred costs for the response activities performed at the Hardage site by EPA Headquarters' employees, in the form of payroll expenses of those employees, in the amount of at least $49,795.81.

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[7] HSC, L & S Bearing by reference, and USPCI either do not contest, or are willing that the above-listed factual allegations nos. 1-4 be deemed admitted, for purposes of this summary judgment motion. HSC's Response Brief at 2; USPCI's Response at 2.

[8] HSC argues not all HSC defendants have stipulated not to contest liability, and that the liability stipulations speak for themselves. HSC's Response Brief at 3. The Court has reviewed the stipulations. At footnote 3 above, the Court notes that certain of the defendants have not yet been found liable.

[9] HSC asserts fact disputes as to each of the United States' undisputed facts nos. 6-33, 31 of which are listed here and are incorporated herein as the Court's findings of undisputed facts. As discussed in Section V of this Order, the Court finds genuine, issues of material fact only as to the Department of Justice's indirect costs, United States' proposed undisputed facts nos. 30 & 31.

USPCI disputes the United States' listed facts 6-33 alleging "not all costs asserted are response costs or response activities which are not inconsistent with the National Contingency Plan, and/or to the extent they are indirect costs." USPCI's Response at 2. However, USPCI provided no affidavits or evidence to support this assertion as required by Fed.R.Civ.P. 56(e).

8. The United States has incurred costs of at least $9,273.71 for the travel expenses of EPA Headquarters employees traveling to perform response activities at the Hardage site.

9. EPA Region VI employees have performed response activities at the Hardage site.

10. The United States has incurred costs for the response activities performed by Region VI employees at the Hardage site of at least $288,160.95 in payroll expenses for those employees.

11. The United States has incurred costs of at least $4,158.65 in amounts paid by Region VI to private vendors (exclusive of travel expenses of Region VI personnel) in connection with response activities of Region VI personnel at the Hardage site.

12. Region VI personnel have traveled to perform response activities at the Hardage site.

13. The United States has incurred costs of at least $38,928.24 in paying the travel expenses of Region VI employees traveling to perform response activities at the Hardage site.

14. CH2M Hill has conducted response activities at the Hardage site pursuant to EPA Contract No. 68-01-6692. Work Assignment No. 31-06M08.0.

15. The United States has incurred costs of at least $846,956.80 in payments to CH2M Hill for the response activities CH2M Hill conducted at the Hardage site pursuant to Contract No. 68-01-6692, Work Assignment No. 31-06M08.

16. CH2M Hill has performed response activities at the Hardage site pursuant to EPA Contract No. 68-01-7251, Work Assignments Nos. 106-6608.0, 142-6N08.0, 167-6L08.0,

17. The United States has incurred costs of at least $1,326,308.25 in payments to CH2M Hill for response activities at the Hardage site conducted pursuant to EPA Contract No. 68-01-7251. Work Assignment Nos. 106-6608.0, 141-6N08.0, & 167-6L08.0.

18. Techlaw, Inc. ("TechLaw") (formerly known as Intera) has performed response activities at the Hardage site pursuant to EPA Contract No. 68-01-6838.

19. The United States has incurred costs of at least $18,955.38 in payments to TechLaw for response activities at the Hardage site conducted pursuant to Contract No. 68-01-6838.

20. TechLaw has performed response activities at the Hardage site pursuant to EPA Contract No. 68-01-7104.

21. The United States has incurred costs of at least $105,552.38 in payments to TechLaw for response activities conducted pursuant to Contract No. 68-01-7104.

22. TechLaw has performed response activities at the Hardage site pursuant to EPA Contract No. 68-01-7369.

23. The United States has incurred costs of at least $162,458.57 in payments to TechLaw for response activities conducted pursuant to Contract No. 68-01-7369.

24. Jacobs Engineering Group, Inc, ("Jacobs") has performed response activities at the Hardage site pursuant to EPA Contract No. 68-01-7351, Work Assignment No. 172.

25. The United States has incurred costs of at least $313,554.00 in payments to Jacobs for response activities conducted pursuant to Contract No. 68-01-7351, Work Assignment No. 172.

26. Viar and Company ("Viar") and contract laboratories participating in EPA's Contract Laboratory Program have performed response activities at the Hardage site.

27. The United States has incurred costs of at least $433,425.87 in payments to Viar and contract laboratories participating in EPA's Contract Laboratory Program for response activities conducted at the Hardage site.

28. DOJ personnel have performed response activities at the Hardage site.

29. The United States has incurred costs of at least $405,035.00 in payroll expenses for the response activities conducted at the Hardage site by DOJ personnel.

30. DOJ has contracted with private vendors to perform response activities at the Hardage site.[10]

31. The United States has incurred at least $1,438,638.00 in payments to private vendors which have performed response activities at the Hardage site under contract with DOJ.[11]

United States' Brief at 2-8; HSC's Response Brief at 2-24; USPCI's Response Brief at 2; Stock Yards' Brief at 2.

III. AUTHORITY FOR AWARDNG RESPONSE COSTS

In December of 1980, Congress enacted CERCLA, 42 U.S.C. §§ 9601-9675, "to initiate and establish a comprehensive response and financing mechanism to abate and control the vast problems associated with abandoned and inactive hazardous waste disposal sites." H.R.Rep. No. 1016(I), 96th Cong., 2d Sess. 22, *reprinted in,* 1980 U.S. Code Cong. & Admin.News 6119, 6125; *United States v. R.W. Meyer, Inc.*, 889 F.2d 1497, 1500 (6th Cir.1989). CERCLA was intended "'primarily to facilitate the prompt cleanup of hazardous waste sites by placing the ultimate financial responsibility for cleanup on those responsible for hazardous wastes.'" *Walls v. Waste Re-*

[10] Formerly United States' undisputed fact no. 32.

[11] Formerly United States' undisputed fact no. 33.

source Corp., 823 F.2d 977, 981 (6th Cir. 1987) (citation omitted).

Under Section 104(a) of CERCLA, 42 U.S.C. § 9604 (a), the President of the United States is authorized to respond with "remedial" or other "removal" actions against any actual or threatened release of any hazardous substance that poses an imminent and substantial threat to the public health and welfare. *United States v. R.W. Meyer, Inc,* 889 F.2d at 1500. In large measure, the President has delegated his authority under CERCLA to the Administrator of EPA. *Id.* at 1500 n. 7; *see* Executive Order No. 12,580, 52 Fed.Reg. 2923 (Jan. 23, 1987), *reprinted in* 42 U.S.C. § 9615 note, pp. 168-72 (1989).

Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), imposes liability on four categories of persons, including owners, "generators," and "transporters" who selected hazardous waste sites, for costs including:

> (A) all costs of removal or remedial action incurred by the United States Government or a State or an Indian tribe not inconsistent with the national contingency plan;

42 U.S.C. § 9607(a)(4)(A). This section authorizes the government to recover *all* costs of removal or remedial response actions. *United States v. R.W. Meyer, Inc.*, 889 F.2d at 1500.

Crucial terms within this cost provision have been broadly defined elsewhere in CERCLA. The terms "remove" or "removal" are defined in definitional section 9601(23) as follows:

> The terms "remove" or "removal" means [sic] the cleanup or removal of released hazardous substances from the environment, such actions as may be necessary [sic] taken in the event of the threat of release of hazardous substances into the environment, such actions as may be necessary to monitor, assess, and

> evaluate the release or threat of release of hazardous substances, the disposal of removed material, or the taking of such other actions as may be necessary to prevent, minimize, or mitigate damages to the public health or welfare or to the environment, which may otherwise result from a release or threat of release. The term includes, in addition, without being limited to . . . action taken under section 9604(b) of this title. . . .

42 U.S.C. § 9601(23) (footnote omitted). The section 9604(b)—authorized action, referenced in the above-listed definition of "remove" or "removal", includes:

> such planning, legal, fiscal, economic, engineering, architectural, and other studies or investigations as [the President] may deem necessary or appropriate to plan and direct response actions, to recover the costs thereof, and to enforce the provisions of this chapter.

42 U.S.C. § 9604(b).

CERCLA goes on to define "remedy" or "remedial action" in pertinent part as follows:

> The terms "remedy" or "remedial action" means [sic] those actions consistent with permanent remedy taken instead of or in addition to removal actions in the event of a release or threatened release of a hazardous substance into the environment . . . The term includes, but is not limited to, such actions at the location of the release as . . . any monitoring reasonably required to assure that such actions protect the public health and welfare and the environment. . . .

42 U.S.C. § 9601(24).

Finally, as currently defined by CERCLA, "respond" or "response" mean "remove, removal, remedy, and remedial action, all such terms (including the terms 'removal' and 'remedial action') include enforcement activities related thereto." 42 U.S.C. § 9601(25).

In *United States v. Northeastern Pharm. & Chem. Co.* ("NEPACCO"), 579 F.Supp. 823 (W.D.Mo.1984), *aff'd in part and rev'd in part on other grounds,* 810 F.2d 726 (8th Cir.1986), *cert. denied,* 484 U.S. 848, 108 S.Ct. 146, 98 L.Ed.2d 102 (1987), the Court interpreted the government's response costs to include:

> (a) Investigations, monitoring and testing to identify the extent of danger to the public health or welfare or the environment.
>
> (b) Investigations, monitoring and testing to identify the extent of the release or threatened release of hazardous substances.
>
> (c) Planning and implementation of a response action.
>
> (d) Recovery of the costs associated with the above actions, and to enforce the provisions of CERCLA, including the costs incurred for the staffs of the EPA and the Department of Justice.

Id. at 850.

Federal courts have held that the United States is entitled to recover its investigative costs from parties liable under Section 107(a). *See State of N.Y. v. General Elec. Co.*, 592 F.Supp. 291, 298 (N.D.N.Y.1984) ("initial response costs . . . are clearly authorized as costs of response under section 101(23), 42 U.S.C. § 9601 (23)."); *United States v. Wade,* 577 F.Supp. 1326, 1333 n. 4 (E.D.Pa.1983) (cost of "investigating, monitoring, testing, and evaluating the situation at the Wade site . . . is recoverable as a cost of removal."); *United States v. Conservation Chem. Co.,* 619 F.Supp. 162, 186 (W.D. Mo.1985).

Courts have also held Section 104(b) entitles the United States to recover its litigation costs from liable parties. *NEPACCO,* 579 F.Supp. at 851 ("the Court

finds that under CERCLA, the defendants are jointly and severally liable for, and the plaintiff is entitled to recover, all litigation costs, including attorney fees, incurred by plaintiff."); *United States v. South Carolina Recycling & Disposal, Inc.* ("SCRDI"), 653 F.Supp. 984, 1009 (D.S.C.1984) (holding the United States can recover litigation expenses), *aff'd in part and vacated in part in United States v. Monsanto Co.*, 858 F.2d 160 (4th Cir. 1988), *cert. denied*, —— U.S. ——, 109 S.Ct. 3156, 104 L.Ed.2d 1019 (1989); *United States v. Conservation Chem Co.*, 619 F.Supp. at 186 (following *NEPACCO*).

Courts have emphasized that liability extends to *ALL* response costs. *United States v. R.W. Meyer, Inc.*, 889 F.2d at 1504. These costs also include enforcement costs and administrative expenses. *SCRDI*, 653 F.Supp. at 1009. In addition, the United States has also been awarded indirect costs. *United States v. R.W. Meyer, Inc.* 889 F.2d 1497, 1501 (6th Cir.1989).

IV. BURDEN OF PROOF ON RESPONSE COSTS

As stated above, pursuant to section 107(a)(4)(A) of CERCLA, defendants found liable must pay *"all* costs of removal or remedial actions incurred by the United States Government . . . not inconsistent with the national contingency plan." 42 U.S.C. § 9607(a)(4)(A) (emphasis added). The National Contingency Plan ("N.C.P."), 40 C.F.R. Part 300—300.71, was promulgated pursuant to Section 9605 of CERCLA, 42 U.S.C. § 9605. The N.C.P. is the EPA regulation which establishes procedures for selection of response actions. "As long as the actions taken by the government were in harmony with the N.C.P., the costs incurred pursuant to those actions are presumed to be reasonable and therefore are recoverable." *NEPACCO*, 579 F.Supp. at 851.

Courts have determined that the defendants bear the burden of proving that the response costs sought by the

United States are inconsistent with the N.C.P. *NEPACCO*, 810 F.2d at 747. In attempting to establish the United States' response actions are inconsistent with the N.C.P., the defendants must demonstrate that the agency's choices of response actions were arbitrary and capricious. *Id.* at 748; *United States v. Ward*, 618 F.Supp. 884, 900 (E.D. N.C. 1985).

Where appropriate, courts have upheld summary judgment on response cost claims. *United States v. R.W. Meyer, Inc.*, 889 F.2d 1497, 1505 (6th Cir.1989); *SCRDI*, 653 F.Supp. at 984.

V. ANALYSIS AND RESOLUTION

A. *Response Costs, Excluding Department of Justice Indirect Costs*

The United States submitted extensive documentation in support of its claim that the defendants owe $5,441,201.25 in EPA direct payroll and travel costs for both EPA headquarters and Regional VI staffs, DOJ's direct enforcement costs and vendor costs, and contract costs.[12] The documentation includes affidavits of various EPA and DOJ employees charged with accumulating the cost data. See, *e.g.*, Affidavits of William Pipkin and Nellie Boone, United States' Brief at Exs. A & B. The affidavits are supported by summaries of cost data accumulated in connection with the Hardage site, and the source of the data. For instance, the payroll for EPA headquarters is kept based on time cards and time sheets which were coded

[12] The categories of costs included payroll and travel expenses for the EPA headquarters staff, payroll and travel expenses for the EPA Region VI staff, site sampling and inspection, installation of groundwater monitoring wells, preliminary assessment and site investigation, remedial investigation and feasibility study, sampling, aerial photography, evidence audits, DOJ litigation support, document production, and technical assistance. See affidavit of Willimina Pipkin, United States Brief at Ex. A.

into a computer program designed specifically for Hardage. See United States' Brief at Ex. A. For the contract costs, the United States also provided affidavits and cost summaries which refer to paid invoices, cancelled checks and letter reports of contractors to support the contract cost requests.[13] The Court has reviewed all of the documentation offered in support of the United States' response cost claim and finds that the United States has presented a prima facie case of its entitlement to response costs in the amount of $5,441,201.25.

Once the United States presented this prima facie case, under Fed.R.Civ.P. 56 the burden then shifted to the defendants to show the United States' response costs were inconsistent with the N.C.P. or were not response or remedial costs incurred in connection with the Hardage site. *NEPACCO*, 810 F.2d at 747.

HSC attempted to create fact disputes concerning each category of United States' response costs. HSC asserted anywhere from three to seven reasons why liability for each cost category was disputed, giving a total of ten separate reasons. A legend of the alleged reasons and a grid sheet showing which of the ten reasons were asserted as to each category are attached to this Order as Appendices A & B. In support of its position, HSC attached the affidavits of Richard Bost and Thomas Matunas. HSC Response Brief at Exs. A & B. The affidavits of Bost and Matunas create no genuine issues of material fact relating to the award of response costs, other than the DOJ in-

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[13] Up until 1985, the EPA did not require the contractors to submit site-specific invoices. The contractors submitted letter reports. However, in further support of the contract cost figures prior to 1985, the United States submitted affidavits of the project managers at Hardage who detailed exactly what the job assignments were for the contractors, and that the project managers personally reviewed all of the progress reports by these contractors. See affidavits of Alan Tavenner and Barry Simmons, United States' Brief at Exs. D & F.

direct costs. For the reasons set forth below the affidavits raise no genuine issues of material fact as to whether (a) United States' costs are inconsistent with the N.C.P., or (b) such costs constitute response or remedial costs incurred in conjunction with the Hardage site.

HSC first alleges the United States should be denied the right to recover certain cost categories because the costs where incurred during a period when HSC was excluded from knowledge or participation in response or remedial activities at Hardage.[14] In *United States v. Mottolo,* 695 F.Supp. 615 (D.N.H.1988), defendants raised a similar argument urging the United States should be barred from recovering any response costs. There the district court rejected the argument stating "the government has no affirmative duty to consult with private parties before undertaking response actions." *Id.* at 629. The Court finds as a matter of law the United States was under no duty to consult with these parties before undertaking response actions. Even if the facts alleged in HSC's affidavits are true, this would not be a valid basis for denying cost recovery.

HSC next challenges certain cost categories, claiming certain tasks were unnecessary or improperly performed, the data was unacceptable or unusuable, or the results were not useful to remediation of Hardage. HSC also argues that certain costs were incurred for tasks that did not contribute additional data at the site, did not advance the evaluation of remedial alternatives, nor yield information upon which EPA could make its response decisions. For those reasons, HSC claims the United States should be denied cost recovery. As stated earlier, the United States is entitled to recover *all* response costs at the Hardage site not inconsistent with the N.C.P. *United*

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[14] USPCI makes this same argument but reasons it to be a showing that the government's response actions were capricious. USPCI's Response at 6-7. The Court rejects this contention for the reasons set forth in this paragraph.

States v. R.W. Meyer, Inc., 889 F.2d at 1504. HSC has the burden of showing the challenged costs are inconsistent with the N.C.P., or were not incurred in connection with the Hardage site. To successfully establish that the United States' response actions are inconsistent with the N.C.P., HSC must demonstrate the United States' choice of response actions were arbitrary and capricious. *NEPACCO*, 810 F.2d at 748. HSC failed to produce any evidence in response to the summary judgment motion demonstrating the United States' actions were inconsistent with the N.C.P. Nor did the conclusionary affidavits filed by HSC adequately challenge the United States' assertions that the costs in question were incurred in connection with the Hardage site.[15] HSC's arguments regarding the efficiency or redundant efficacy of the United States' actions do not bar summary judgment.

HSC also attempts to create a fact dispute claiming certain contract costs may not represent the final, audited amounts the United States will actually incur with respect to the contract tasks performed.[16] The United

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[15] USPCI argues the United States selected and pursued a remedy which is inconsistent with the N.C.P. USPCI's Response at 7-8. USPCI alleges the United States failed to conduct a remedial investigation as required by 40 C.F.R. 300.68(d). In addition, USPCI contends the United States failed to follow appropriate procedures in performing its feasibility study and selection of remedy. USPCI presents no affidavits or evidentiary materials to support these arguments. USPCI merely argues that EPA's abandonment of the selected remedy supports an inference that the remedy is "both technically and procedurally flawed." USPCI's Response at 8. USPCI had the burden of presenting evidence to show these actions were inconsistent with the N.C.P. *Dart Indus. v. Plunkett Co. of Okla., Inc.*, 704 F.2d 496, 498 (10th Cir.1983); *see Lake Hefner Open Space Alliance v. Dole*, 871 F.2d 943, 945-46 (10th Cir.1989). It failed to do so.

[16] The United States clarified this issue in its reply brief by explaining that some EPA payments to certain contractors are "provisional" payments, subject to subsequent revision based on audits or subsequent negotiations between the contractor and EPA's contracting officer. United States' Reply Brief at 32.

States responds that it has agreed with HSC to refund any subsequent reimbursements from contractors, based on later audits or negotiations. See United States' Reply Brief at Ex. C, ¶ 5. The United States agrees the granting of any summary judgment on response costs should be subject to this agreement. For that reason, the Court finds HSC has failed to create a genuine fact dispute on this issue that might bar the granting of summary judgment, and that any order for recovery of response costs will direct refunds if appropriate.

HSC next opposes summary judgment by contending a fact dispute exists as to whether certain costs were incurred in compliance with federal procurement laws and regulations. HSC provides the Court no authority showing that this factor is to be considered in awarding response costs. Nor does HSC provide any evidence that there was any violation of federal procurement laws in connection with the Hardage site. It is not this Court's role to make an independent review of the United States' procurement processes at the Hardage site when awarding response costs. The Court's consideration is limited to whether the costs were in fact incurred in connection with the Hardage site, and whether the costs were inconsistent with the N.C.P. The Court finds this contention of HSC is without merit.

HSC urges a fact dispute is created and summary judgment is improper, because the United States failed to document that the purposes of some of these costs were for response activities at the Hardage site. The Court has reviewed the affidavits filed by the United States, and finds the United States has presented a prima facie case that the response costs were incurred at the Hardage site. Pursuant to Fed.R.Civ.P. 56 and the case-law interpreting CERCLA response costs, the burden then shifted to the HSC to show the costs were not incurred at the Hardage site, and the costs were inconsistent with the N.C.P. HSC failed to produce any evi-

dence to meet this burden. The affidavits supporting HSC's contention were merely conclusionary, raising no genuine issue of material fact within the meaning of Fed.R.Civ.P. 56. *Luckett v. Bethlehem Steel Corp.*, 618 F.2d 1373, 1380 & n. 7 (10th Cir.1980). The Court thus finds that this contention is also without merit.

Finally, HSC argues a fact dispute is created because the United States failed to produce adequate documentation for HSC to determine what portion of these costs were Hardage site response activities. HSC continues to argue here, as it did in its motion to compel, that it has inadequate documentation due to the United States' failure to supply certain requested documents. The Court has reviewed the documentation provided by the United States in support of this motion for summary judgment. As earlier stated, the Court finds the United States has presented a prima facie case. There was an obligation on the part of HSC, if it intended to challenge these response costs, to take appropriate action to obtain the necessary evidence. It was also incumbent upon HSC to present the evidence in response to *this* motion for summary judgment. HSC failed to do that here.[17] The Court finds HSC failed to produce any evidence to sustain its burden on this issue.

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[17] On November 22, 1988 this Court entered an Order denying HSC's motion to compel the production of certain government cost documents. Order, No. CIV-86-1401-P (W.D.Okla. Nov. 22, 1989, docket no. 2261). The Order recognized that HSC had had notice that the United States was seeking reimbursement from the defendants for "all investigatory, enforcement, and other response costs." Complaint at ¶ 1 & C, No. CIV-86-1401-P (W.D.Okla. June 25, 1986). The Order further noted HSC waited until one month before the commencement of this trial to try to compel the United States to comply with HSC's production requests. HSC failed to file any Fed.R.Civ.P. 56(f) request. This Court's January 20, 1989 scheduling order specifically noted that agreed discovery extensions *would not be permitted* to adversely impact dispositive motions. Order at 8, No. CIV-86-1401-P (W.D.Okla. Jan. 20, 1989).

Lastly, both Stock Yards and HSC contend summary judgment on the United States' response cost claim is precluded because of the defendants' counterclaims and/or affirmative defenses which are still pending. Stock Yards' Response at 2-3; HSC's Response at 25. Stock Yards argues the response costs sought by the United States are included in the Stock Yards' counterclaim for contribution. Stock Yards' Response at 2. On November 22, 1989, this Court entered an Order dismissing the defendants' (including Stock Yards') third and fourth counterclaims for contribution and indemnity. Order Granting United States' Motion to Dismiss Third and Fourth Counterclaims for Contribution and Indemnity, No. CIV-86-1401-P (W.D.Okla. No. 22, 1989). Because Stock Yards' counterclaim for contribution is no longer pending, the Court finds the Stock Yards' contention to be without merit.

In considering HSC's contention concerning its affirmative defenses, the Court thoroughly reviewed the stipulation between the United States and the majority of the HSC defendants filed September 2, 1989. Stipulation for Entry of Judgment of Liability ("Stipulation"), No. CIV-86-1401-P (W.D.Okla. Sept. 2, 1988, docket no. 1428). The participating defendants stipulated as follows:

> The Participating Defendants reserve their right to assert all defenses and counterclaims that may be used to establish Plaintiff's liability. Such reservation of defenses does not include reserving the right to assert any defenses as affirmative defenses to avoid the liability stipulated herein.

Stipulation at 3, ¶ 2.

However, the participating defendants reserved certain rights in the Stipulation as follows:

> To contest the entitlement to any costs, including without limitations, the amount and types thereof,

> and damages or other monetary relief that may be recovered from the Participating Defendants, and to pursue an opportunity for mixed funding . . . .

Stipulation at 3, ¶ 3a.

In response to HSC's argument that their affirmative defenses bar the entry of summary judgment, the United States contends that those defendants which have stipulated to section 107 liability in this case have waived any affirmative defenses they may have had to liability for the United States' response costs. United States' Reply Brief at 24.

It is clear from the Stipulation that HSC reserved the right to contest the United States' entitlement to these response costs. However, as reasoned above, the time for HSC to contest these costs was in response to *this* motion for summary judgment. Once the United States presented a prima facie case for its response costs claim, pursuant to Fed.R.Civ.P. 56, the burden shifted to HSC to present affidavits and documentation to substantiate HSC's affirmative defenses. HSC wholly failed to present such materials or evidence. HSC's Response Brief at 25-26. Accordingly, HSC's allegedly pending affirmative defenses do not bar the entry of this summary judgment.

As to the pending counterclaims, as stated above, the Court dismissed the defendants' counterclaims for contribution and indemnity on November 22, 1989. Order Granting United States' Motion to Dismiss Third and Fourth Counterclaims for Contribution and Indemnity, No. CIV-86-1401-P (W.D.Okla. Nov. 22, 1989). Accordingly, because these two counterclaims are no longer pending, they provide no basis for denying summary judgment.

Also, on November 22, 1989, the Court entered an Order denying the United States' motion to dismiss the defendants' fifth counterclaim for recoupment. Order Denying United States' Motion to Dismiss Fifth Counter-

claim for Recoupment, No. CIV-86-1401-P (W.D.Okla. Nov. 22, 1989). However, the Order expressed this Court's concern regarding the "alleged nexus or common denominator between the relief sought by the government and the precise nature of the defendants' recoupment claim." *Id.* at 3. Despite the continued viability of HSC's recoupment counterclaim, to successfully defeat summary judgment for the United States' response cost presented herein, HSC had the burden under Fed.R.Civ.P. 56 to present evidentiary materials to prove the existence of fact disputes relating to the recoupment counterclaim. HSC's brief provides neither a citation to evidentiary affidavits nor other materials required to meet this burden. HSC's Response Brief at 25-26. Accordingly, HSC's pending recoupment counterclaim does not bar the entry of this summary judgment.

For the above reasons, the Court finds the United States presented a prima facie case for partial summary judgment on the response costs incurred by the United States in connection with the Hardage site in the amount of $5,441,201.25. The burden then shifted to the defendants to show these costs were inconsistent with the N.C.P., *NEPACCO*, 810 F.2d at 747, or to prove the costs were not incurred at the Hardage site. As shown above, the defendants totally failed to meet this burden. Accordingly, the United States' motion for partial summary judgment should be GRANTED on the response costs incurred by the United States in connection with the Hardage site in the amount of $5,441,201.25.

B. *Department of Justice's Indirect Costs*

The United States also seeks an award of response costs for the DOJ's indirect costs in the amount of $850,864.00. These indirect costs are costs which are generally necessary to support the functioning of DOJ Land and Natural Resources Division professional personnel in their case work, but which are not allocated

directly to specific cases. Those costs include the cost of office space, utilities, and supplies. United States' Brief at 20. In addition, the indirect costs also include indirect labor costs (for example, attorney and paralegal administrative time, secretarial support, accounting support, record keeping and time keeping), compensated absences (for example, vacation, holiday, and sick time), fringe benefits, and training. United States' Brief at Ex. K, p. 3. In support of this cost request the United States attached the affidavit of C.P.A. Patrick McGeehin, which describes the methodology used to allocate these indirect costs to the Hardage site. United States' Brief at Ex. K, p. 3; Brief at 20-21.

HSC's response concerning DOJ's indirect costs is supported by the affidavit of Thomas Matunas. HSC's Response Brief at Ex. A. The response raises four points. Matunas asserts that approximately $149,000.00 of DOJ's indirect costs are Standard Level Users Charges (SLUC). Matunas argues these SLUC charges include rent paid by DOJ on government-owned buildings and an internal "phantom profit" amount for the General Services Administration ("GSA"). Matunas concludes it is unreasonable to charge the HSC for such "phantom rental" charges.

In response to the SLUC assertion, the United States attaches the affidavit of Manfred Van der Walde. See affidavit of Van der Walde, United States' Reply. Van der Walde's affidavit indicates that Congress has authorized GSA to finance the property management activities for government agencies, including DOJ. The agencies then pay the GSA for these activities which include rent, heat and other utilities, cleaning, and maintenance. The United States argues these are actual costs to DOJ. The Court agrees. The Court finds that as to the SLUC charges, HSC has failed to create a genuine issue of material fact concerning the United States' right to these costs.

HSC next argues DOJ's indirect costs violate interagency agreements between DOJ and the EPA. Matunas contends the interagency agreements between DOJ and EPA provide only for recovery of direct charges. Matunas asserts $329,000.00 of the 1987 indirect costs for DOJ were allocated to the Hardage site in violation of these agreements, and such costs are not reimbursable. The United States responds these interagency agreements are irrelevant. Further, the United States argues as long as these indirect costs were, in fact, incurred, they should be reimbursed. The Court finds these indirect costs were, in fact, costs to the DOJ. The interagency agreements only determine whose budget, whether EPA or DOJ, initially absorbs the costs. The agreements in no way affect the right of the United States to obtain reimbursement for these response costs. The Court finds HSC has also failed to create a genuine issue of material fact concerning these interagency agreements.

HSC next contends, through Matunas' affidavit, DOJ's indirect costs of $850,864.00 for 1987 and 1988 include indirect labor costs at a ratio of 1 to 1 to direct labor costs. Matunas asserts the Hardage site has been assessed almost twice the hourly rate of DOJ employees when they work at the Hardage site. Matunas argues this results in an allocation to the Hardage site of $370,000.00 in indirect labor costs for activities that have no direct benefit to the Hardage site. Matunas states in his expert opinion, this high proportion of non-productive labor costs is excessive, and indicates charges are being made to the Hardage site for work unrelated to the Hardage site. HSC Brief at Ex. A, p. 9. Matunas further points out, in documents attached to his affidavit, that over time, the United States' witness McGeehin has changed the factor for additional superfund overhead rate from 48.02% to 5% for the same time period. HSC argues that McGeehin, in his affidavit supporting summary judgment for response costs, makes no mention of this additional superfund overhead, although he includes it in the

indirect costs allocated to the Hardage site. HSC Brief at Ex. A, p. 9.

The United States responds by stating McGeehin's affidavit makes clear this additional superfund overhead rate represents " 'non-case specific charges related only to Superfund cases' (i.e., charges which are not assigned to individual cases, but which do relate only to Superfund cases, rather than to all cases in the Lands Division in United States' Reply Brief at 22. The United States' only response to the "excessive" statements of Matunas is to say these statements are conclusionary.

Finally, HSC points out from a legal standpoint that the cases are divided on the issue of indirect costs. Relying on *United States v. Ottati & Goss,* 694 F.Supp. 977 (D.N.H.1988), HSC urges the Court to deny the United States' requests for DOJ's indirect costs.

The Court has thoroughly reviewed the few cases which have considered the indirect cost issue and finds the cases allowing recovery of indirect costs to be persuasive. In *United States v. Ottati & Goss,* 694 F.Supp. 977, the court denied EPA's recovery of indirect costs for rent, utilities, supplies, clerical support, and other overhead expenses. There, the court determined that indirect costs included expenses necessary to operate the Superfund program generally, and could not be attributed directly to a particular site. For that reason, the court awarded no indirect costs to the United States. However, because the *Ottati & Goss* court offered no additional explanation for its decision, the Court finds the case to be of limited value. In contrast, the Sixth Circuit recently addressed the indirect cost issue, allowing the United States to recover indirect costs. *United States v. R.W. Meyer, Inc.,* 889 F.2d at 1503. The Sixth Circuit held that indirect costs *are* attributable to response efforts, because they represent a portion of overhead expenses needed to support the government's direct response activities. *Id.* at 1503.

The Court concurs with the reasoning of *Meyer,* and finds that the United States' indirect costs associated with the Hardage site may be recovered as response costs under Section 107(a)(4)(A). However, on the basis of the current record before the Court on the motion for partial summary judgment, the Court cannot determine whether the United States' requested DOJ indirect costs, particularly in the area of indirect labor costs, should be awarded. As with the direct costs, the United States has presented documentation establishing a prima facie case for an award of DOJ's indirect costs in the amount of $850,864.00. In response to this, HSC filed Matunas' affidavit attempting to contest the validity of the United States' indirect cost allocation. Matunas questions the excessiveness of the indirect labor costs attributed to the Hardage site demonstrated by the ratio of direct to indirect labor costs. In Matunas' expert opinion, this ratio shows an improperly high amount of indirect costs have been allocated to the Hardage site which should not be recoverable from the defendants including HSC. While the Court views this as a close case, the factual objections based on Matunas' expert opinion raise a genuine issue of material fact which precludes the granting of summary judgment on this issue. Accordingly, the United States' motion for partial summary judgment on DOJ's indirect costs in the amount of $850,864.00 should be DENIED.

VI. DECLARATORY JUDGMENT FOR FUTURE RESPONSE COSTS

The United States seeks a declaratory judgment of the liability of these defendants for future response costs associated with the Hardage site. HSC responds, at present, the amount of the costs is purely speculative. HSC then asserts, without authority, that declaratory, summary judgment is not an appropriate vehicle for deciding unliquidated, future claims. In *NEPACCO,* 579 F.Supp. at 852, the District Court of Missouri held that although

the court could not award costs until they are incurred, the court can presently determine liability for future costs.

Accordingly, the United States' motion for a declaratory judgment for liability for future response costs associated with the Hardage site except the DOJ indirect costs shall also be GRANTED.

VII. CONCLUSION

For the reasons stated above, the United States motion for partial summary judgment for response costs in connection with the Hardage site in the amount of $5,441,201.25 is GRANTED as to all defendants who have already stipulated to liability or have been found liable. Should other defendants later be found liable, they also would be jointly and severally liable for these same response costs. Should later final, audited figures for contract work at the Hardage site result in a reduction of the figures in this Order, the United States is ordered to refund such amounts. The United States' motion for summary judgment for DOJ's indirect costs in the amount of $850,864.00 is DENIED.

The United States' motion for declaratory judgment for liability for future response costs is also GRANTED except for DOJ's indirect costs.

IT IS SO ORDERED.

APPENDIX A

LEGEND OF HSC OBJECTIONS TO UNITED STATES' RESPONSE COSTS

Hardage asserted liabiliy for each cost category was disputed for the following reasons:

1. The government incurred some of these costs for tasks performed in a time period during which it excluded HSC defendants from knowledge of and/or participation in activities at the site. (HSC excluded)

2. The government incurred some of these costs for tasks performed which, because they were unnecessary or improperly performed, produced data which was unacceptable or unusable, or results which were not useful to remediation of the Hardage site. (unnecessary)

3. The government incurred some of these costs for tasks performed which neither contributed additional data regarding site conditions, advanced the evaluation of remedial alternatives, nor yielded information upon which EPA has made or could make its response decisions. (didn't contribute)

4. The government has failed to document that the purposes for which some of these costs were incurred were response activities at the Hardage site. (failed to document at Hardage)

5. The government has failed to produce adequate documentation to enable HSC defendants to determine what portion of these costs were for response activities at the Hardage site. (not enough documentation)

6. The government has failed to document that these costs represent the final, audited amounts it actually will incur with respect to the tasks performed. (not final figures)

7. The government incurred some of these costs in a manner which is not in compliance with its contracting

requirements and/or applicable laws and regulations. (not in compliance)

8. A portion of the amount claimed includes items which result in no actual cost to the government. (not actual cost to U.S.)

9. The amount claimed includes costs which are not in accordance with EPA/DOJ interagency agreements. (violate inter-agency agreements)

10. The amount claimed includes costs for work and expenses which neither were caused by nor benefit response activities at the Hardage site. (no benefit to Hardage)

United States Undisputed Facts	HSC Objections									
	HSC Excluded	Unnecessary	Didn't Constitute	Failed To doc at Hardcpy	Failed To Produce	Not Final Figures	Not In Compliance	No Cost To U.S.	Violate Interagency Agreements	No Benefit
6-7 EPA Payroll 49,795.81	+	+	+	+	+					
8 EPA Headquarters Travel 9,273.71	+	+	+							
9-10 EPA Region VI Payroll $268,160.95	+	+	+	+	+					
11 EPA Region VI Private Vendor Exp $4,158.65		+	+							
12-13 EPA Region VI Travel $38,928.24	+	+	+							
14-15 CH2M Hill $846,956.80	+	+	+	+	+	+	+			

APPENDIX B—Continued

United States' Undisputed Facts	HSC Objections									
	HSC Excluded	Unnecessary	Didn't Contribute	Failed To doc at Hardcpy	Failed To Produce	Not Final Figures	Not In Compliance	No Cost To U.S.	Violate Interagency Agreements	No Benefit
16-17 CH2M Hill 68-01-7251 $1,326,308 25		+	+	+	+	+	+			
18-19 Techlaw 68-01-6838 $18,955 38	+	+	+	+	+	+	+			
20-21 Techlaw 68-01-7104 $105,552 38	+	+	+	+	+	+	+			
22-23 Techlaw 68-01-7369 $162,458 57		+	+	+	+	+	+			
24-25 Jacobs $313,554		+	+	+	+	+	+			
26-27 Viar $433,425 87	+	+	+	+	+	+	+			
28-29 DOJ Direct Labor $405 035		+	+	+	+					

APPENDIX B -Continued

United States Undisputed Facts	HSC Objections:									
	HSC Excluded	Unnecessary	Didn't Contribute	Failed To doc at Hardcpy	Failed To Produce	Not Final Figures	Not In Compliance	No Cost To U.S.	Violate Interagency Agreements	No Benefit
30-31 DOJ Indirect $850,864		+	+					+	+	+
32-33 DOJ other direct $1,438,638		+	+	+	+	+	+			

APPENDIX E

STATUTORY MATERIALS

42 U.S.C. § 9601(23)-(25)

§ 9601. Definitions

(23) The terms "remove" or "removal" means the cleanup or removal of released hazardous substances from the enivronment, such actions as may be necessary taken in the event of the threat of release of hazardous substances into the environment, such actions as may be necessary to monitor, assess, and evaluate the release or threat of release of hazardous substances, the disposal of removed material, or the taking of such other actions as may be necessary to prevent, minimize, or mitigate damage to the public health or welfare or to the environment, which may otherwise result from a release or threat of release. The term includes, in addition without being limited to, security fencing or other measures to limit access, provision of alternative water supplies, temporary evacuation and housing of threatened individuals not otherwise provided for, action taken under section 9604(b) of this title, and any emergency assistance which may be provided under the Disaster Relief and Emergency Assistance Act [42 U.S.C.A. § 5121 et seq.].

(24) The terms "remedy" or "remedial action" means those actions consistent with permanent remedy taken instead of or in addition to removal actions in the event of a release or threatened release of hazardous substance into the environment, to prevent or minimize the release of hazardous substances so that they do not migrate to cause substantial danger to present or future public health or welfare or the environment. The term includes, but is not limited to, such actions at the location of the release as storage, confinement, perimeter protection using dikes, trenches, or ditches, clay cover, neutralization, cleanup of released hazardous substances or contaminated materials,

recycling or reuse, diversion, destruction, segregation of reactive wastes, dredging or excavations, repair or replacement of leaking containers, collection of leachate and runoff, onsite treatment or incineration, provision of alternative water supplies, and any monitoring reasonably required to assure that such actions protect the public health and welfare and the environment. The term includes the costs of permanent relocation of residents and businesses and commuity facilities where the President determines that, alone or in combination with other measures, such relocation is more cost-effective than and environmentally preferable to the transportation, storage, treatment, destruction, or secure disposition offsite of hazardous substances, or may otherwise be necessary to protect the public health or welfare; the term includes offsite transport and offsite storage, treatment, destruction, or secure disposition of hazardous substances and associated contaminated materials.

(25) The terms "respond" or "response" means remove, removal, remedy, and remedial action, all such terms (including the terms "removal" and "remedial action") include enforcement activities related thereto.

42 U.S.C. § 9605(a)

§ 9605. National contingency plan

(a) Revision and republication

Within one hundred and eighty days after December 11, 1980, the President shall, after notice and opportunity for public comments, revise and republish the national contingency plan for the removal of oil and hazardous substances, originally prepared and published pursuant to section 1321 of title 33, to reflect and effectuate the responsibilities and powers created by this chapter, in addition to those matters specified in secion 1321(c)

(2) of title 33. Such revision shall include a section of the plan to be known as the national hazardous substance response plan which shall establish procedures and standards for responding to releases of hazardous substances, pollutants, and contaminants, which shall include at a minimum:

(1) methods for discovering and investigating facilities at which hazardous substances have been disposed of or otherwise come to be located;

(2) methods for evaluating, including analyses of relative cost, and remedying any releases or threats of releases from facilities which pose substantial danger to the public health or the environment;

(3) methods and criteria for determining the appropriate extent of removal, remedy, and other measures authorized by this chapter;

(4) appropriate roles and responsibilities for the Federal, State, and local governments and for interstate and nongovernmental entities in effectuating the plan;

(5) provision for identification, procurement, maintenance, and storage of response equipment and supplies;

(6) a method for and assignment of responsibility for reporting the existence of such facilities which may be located on federally owned or controlled properties and any releases of hazardous substances from such facilities;

(7) means of assuring that remedial action measures are cost-effective over the period of potential exposure of the hazardous substances or contaminated materials;

(8)(A) criteria for determining priorities among releases or threatened releases throughout the United States for the purpose of taking remedial action and,

to the extent practicable taking into account the potential urgency of such action, for the purpose of taking removal action. Criteria and priorities under this paragraph shall be based upon relative risk or danger to the public health or welfare or the environment, in the judgment of the President, taking into account to the extent possible the population at risk, the hazard potential of the hazardous substances at such facilities, the potential for contamination of drinking water supplies, the potential for direct human contact, the potential for destruction of sensitive ecosystems, the damage to natural resources which may affect the human food chain and which is associated with any release or threatened release, the contamination or potential contamination of the ambient air which is associated with the release or threatened release, State preparedness to assume State costs and responsibilities, and other appropriate factors;

(B) based upon the criteria set forth in subparagraph (A) of this paragraph, the President shall list as part of the plan national priorities among the known releases or threatened releases throughout the United States and shall revise the list no less often than annually. Within one year after December 11, 1980, and annually thereafter, each State shall establish and submit for consideration by the President priorities for remedial action among known releases and potential releases in that State based upon the criteria set forth in subparagraph (A) of this paragraph. In assembling or revising the national list, the President shall consider any priorities established by the States. To the extent practicable, the highest priority facilities shall be designated individually and shall be referred to as the "top priority among known response targets", and, to the extent practicable, shall include among the one hundred highest priority facilities one such facility from each

State which shall be the facility designated by the State as presenting the greatest danger to public health or welfare or the environment among the known facilities in such State. A State shall be allowed to designate its highest priority facility only once. Other priority facilities or incidents may be listed singly or grouped for response priority purposes.

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42 U.S.C. § 9607(a)

§ 9607. Liability

(a) Covered persons; scope; recoverable costs and damages; interest rate; "comparable maturity" date

Notwithstanding any other provision or rule of law, and subject only to the defenses set forth in subsection (b) of this section—

(1) the owner and operator of a vessel or a facility,

(2) any person who at the time of disposal of any hazardous substance owned or operated any facility at which such hazardous substances were disposed of,

(3) any person who by contract, agreement, or otherwise arranged for disposal or treatment, or arranged with a transporter for transport for disposal or treatment, of hazardous substances owned or possessed by such person, by any other party or entity, at any facility or incineration vessel owned or operated by another party or entity and containing such hazardous substances, and

(4) any person who accepts or accepted any hazardous substances for transport to disposal or treatment facilities, incineration vessels or sites se-

lected by such person, from which there is a release, or a threatened release which causes the incurrence of response costs, of a hazardous substance, shall be liable for—

(A) all costs of removal or remedial action incurred by the United States Government or a State or an Indian tribe not inconsistent with the national contingency plan;

(B) any other necessary costs of response incurred by any other person consistent with the national contingency plan;

(C) damages for injury to, destruction of, or loss of national resources, including the reasonable costs of assessing such injury, destruction, or loss resulting from such a release; and

(D) the costs of any health assessment or health effects study carried out under section 9604(i) of this title.

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42 U.S.C. § 9613(j)

§ 9613. Civil proceedings

(j) Judicial review

(1) Limitation

In any judicial action under this chapter, judicial review of any issues concerning the adequacy of any response action taken or ordered by the President shall be limited to the administrative record. Otherwise applicable principles of administrative law shall govern whether any supplemental materials may be considered by the court.

(2) Standard

In considering objections raised in any judicial action under this chapter, the court shall uphold the President's decision in selecting the response action unless the objecting party can demonstrate, on the administrative record, that the decision was arbitrary and capricious or otherwise not in accordance with law.

(3) Remedy

If the court finds that the selection of the response action was arbitrary and capricious or otherwise not in accordance with law, the court shall award (A) only the response costs or damages that are not inconsistent with the national contingency plan, and (B) such other relief as is consistent with the National Contingency Plan.

(4) Procedural errors

In reviewing alleged procedural errors, the court may disallow costs or damages only if the errors were so serious and related to matters of such central relevance to the action that the action would have been significantly changed had such errors not been made.

Fed. R. Civ. P. 54(b)

VII. JUDGMENT

Rule 54. Judgments; Costs

(b) JUDGMENT UPON MULTIPLE CLAIMS OR INVOLVING MULTIPLE PARTIES. When more than one claim for relief is presented in an action, whether as a claim, counterclaim, cross-claim, or third-party claim, or when multiple parties are involved, the court may direct the entry of a final judgment as to one or more but fewer

than all of the claims or parties only upon an express termination that there is no just reason for delay and upon an express direction for the entry of judgment. In the absence of such determination and direction, any order or other form of decision, however, designated, which adjudicates fewer than all the claims or the rights and liabilities of fewer than all the parties shall not terminate the action as to any of the claims or parties, and the order or other form of decision is subject to revision at any time before the entry of judgment adjudicating all the claims and the rights and liabilities of all the parties.